

VOL. X, Part III.

30th March, 1936.

THE  
PROCEEDINGS  
OF THE  
ROYAL  
ENTOMOLOGICAL SOCIETY  
OF  
LONDON



LONDON:  
PUBLISHED BY THE SOCIETY AND  
SOLD AT ITS ROOMS, 41, QUEEN'S GATE, S.W.7

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[Price 15s. 0d.]



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- 1925 GESTRO, Prof. R., *Direttore del Museo Civico di Storia Naturale, Genova, Italy.*
- 1931 (1929) HORN, Dr. Walther, 20, *Gosslerstrasse, Berlin-Dahlem, Germany.*
- 1926 HORVATH, Dr. Geza, *Museum Nationale Hungaricum, Budapest, Hungary.*
- 1915 † HOWARD, Dr. L. O., *Ex-Chief, Bureau of Entomology, U.S. Dept. of Agriculture, Washington, U.S.A.*
- 1914 LAMEERE, Professor A., 74, *rue Defarg, Bruxelles.*
- 1918 MARCHAL, Dr. Paul, 45, *rue de Verrières, Antony, Seine, France.*
- 1931 † (1877) OBERTHÜR, M. René, *Rennes, Ille-et-Vilaine, France.*
- 1931 REBEL, Prof. H., *Naturhistorisches Museum, Burggring 7, Vienna I, Austria.*
- 1913 SEMENOFF TIAN-SHANSKI, A. P., *Vassili Ostrov, 8 lin., 39, Leningrad, Russia.*
- 1931 † SILVESTRI, Prof. F., *R. Istituto Superiore Agraria, Portici, Naples, Italy.*
- 1931 WHEELER, Prof. W. M., Ph.D., Sc.D., LL.D., *Museum of Comparative Zoology, Harvard College, Cambridge, Mass., U.S.A.*

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#### SPECIAL LIFE FELLOWS.

Date of  
Election.

- 1926 (1891) FROHAWK, F. W., *Essendine, Cavendish-road, Sutton, Surrey.*
- 1926 (1890) NEWSTEAD, Prof. R., M.Sc., F.R.S., A.L.S., Hon. F.R.H.S., *St. Mary's Cottage, 67, Handbridge, Chester.*
- 1931 (1905) POWELL, H., *Pharmacie du Croissant, Meknès-Medina, Morocco.*
- 1933 (1905) † SHELDON, W. George, F.Z.S. (TREASURER, 1918-28; V.-PRES., 1920), *West Watch, Oxted, Surrey.*
- 1933 (1878) † WALKER, J. J., M.A., R.N., F.L.S. (PRESIDENT, 1919-20; V.-PRES., 1916, 1921; SEC., 1899, 1905-18; COUNCIL, 1894, 1921), *Aorangi, Lonsdale-road, Summertown, Oxford.*
- 1933 (1906) † WHEELER, The Rev. George, M.A., F.Z.S. (SECRETARY, 1911-21; V.-PRES., 1914; COUNCIL, 1921), *Ellesmere, Gratwicke-road, Worthing.*

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(The names of those who have not yet paid either the Entrance Fee or the first year's subscription are not included.)

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Marked † have compounded for their Annual Subscriptions.

Marked ‡ have been formally admitted into the Society (to Dec. 1935).

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- 1913 ‡ ADAMS, B. G., *The Old Rectory, Swell, Fivehead, Somerset.*  
 1902 ‡ ADKIN, B. W., "*Highfield*," *Pembury, Tunbridge Wells.*  
 \*1885 ‡ ADKIN, Robert.  
 1921 ALEXANDER, Prof. C. P., *Fernald Hall, Massachusetts Agricultural College, Amherst, Mass., U.S.A.*  
 1931 ALFIERI, Anastase, *P.O. Box 430, Cairo, Egypt.*  
 1920 ‡ ALTSON, A. M., 41, *The Residency, Von Brandis'-square, Johannesburg, S. Africa.*  
 1919†‡ ANDREWES, Dr. C. H., 32, *Ossulton-way, N. 2.*  
 1910†‡ ANDREWES, H. E. (COUNCIL, 1920-2), 8, *North-grove, Highgate, N. 6.*  
 1922 ‡ ANDREWES, H. L., *The Warren, Bere Regis, Wareham, Dorset.*  
 1932 ‡ ANDREWS, E. A., 2, *Abbey-gardens, St. John's Wood, N.W. 8.*  
 1899 ‡ ANDREWS, Henry W. (COUNCIL, 1930-2), 6, *Footscray-road, Eltham, S.E. 9.*  
 1901 ‡ ANNING, William, 15, *Arthur-street West, E.C. 4.*  
 1908 ‡ ANTRAM, Charles B., *Heathfield, Moorland-road, West Moors, Dorset.*  
 1927 ‡ ARMSTRONG, R. R., B.A., M.D., B.Ch., 65, *Lee-road, Blackheath, S.E. 3.*  
 1913 ‡ ARMYTAGE, Edward O., c/o *The Westminster Bank, Ltd., 25, Sussex-place, S.W. 7.*  
 1907 ‡ ARNOLD, G., D.Sc., A.R.C.S., Box 240, *Bulawayo, South Africa.*  
 1899†‡ ARROW, G. J. (COUNCIL, 1905-7), 9, *Rossdale-road, Putney, S.W. 15; and British Museum (Natural History), Cromwell-road, S.W. 7.*  
 \*1911 ‡ ASHBY, Rev. E. B.  
 1907†‡ ASHBY, Sidney R., 37, *Hide-road, Headstone, Harrow.*  
 1925 ASHWORTH, J. H., *Walton Fold, Longridge, Preston, Lancs.*  
 1921 ATKINSON, D. J.  
 1927 ‡ ATTIA, R., A.R.C.S., B.Sc., *Plant Protection Section, Ministry of Agriculture, Cairo, Egypt.*  
 1928 ‡ AUBERTIN, Miss Daphne, M.Sc., F.L.S., 5, *Drayton-gardens, S.W. 10.*  
 1930 AUSTIN, M. D., *Dept. Economic Entomology, South Eastern Agricultural College, Wye, Kent.*  
 1913 AVINOFF, A., Director, *Carnegie Museum, Pittsburg, U.S.A.*  
 1904†‡ BAGNALL, Richard S., D.Sc., F.R.S.E., F.L.S., 9, *York-place, Edinburgh.*  
 1909 ‡ BAGWELL-PUREFOY, Capt. Edward, F.Z.S. (COUNCIL, 1930-2), *The Cottage, East Farleigh, Kent.*  
 1934 BAILEY, Lt.-Col. F. M., C.I.E., *Egmere, Walsingham, Norfolk.*  
 \*1933 BAINBRIDGE, W. G.  
 1934 BAKER, F. T., *City and County Museum, Lincoln.*



- 1903–1913, 1924 :
- † BALDOCK, G. R., *Oakburn Villa*, 427, *Hertford-road*, *Enfield Highway*.
- 1916 † BALFOUR, Miss Alice, *Whittingehame*, *Haddington*, *Scotland*.
- 1921 † BALFOUR-BROWNE, Prof. W. A. F., F.R.S.E., F.L.S., F.Z.S. (V.-PRES., 1934; COUNCIL, 1925–7, 1933– ), *Winscombe Court*, *Winscombe*, *Somerset*.
- 1912 † BALLARD, E., *Department of Agriculture*, *Jerusalem*, *Palestine*.
- \*1890 BARCLAY, Francis H., F.G.S.
- 1902 † BARRAUD, P. J., *The Cottage*, *Kyrchi-lane*, *Colehill*, *Wimborne*, *Dorset*.
- 1932 † BARTLETT, C., *Morwenstow*, 8, *Woodhill*, *Portishead*, nr. *Bristol*.
- 1907 † BARTLETT, H. Frederick D., *Island of St. Helena*, *S. Atlantic*.
- 1935 BAUM, W. W., 338, *Victoria Park-road*, *Leicester*.
- 1908 BAYFORD, E. G., 16, *Rockingham-street*, *Barnsley*.
- 1912 † BAYNES, E. S. A., *Monkshatch Cottage*, *Compton*, *Guildford*, *Surrey*.
- 1896† BEARE, Prof. Sir T. Hudson, B.Sc., F.R.S.E. (V.-PRES., 1910, 1932, 1934; COUNCIL, 1909–11, 1925–7, 1932–4), 10, *Regent-terrace*, *Edinburgh*.
- 1934 † BECKETT, The Rev. M. T., O.B.E., *The Presbytery*, 42, *Cranleigh-villas*, *Kenton*, *Harrow*, *Middx.*
- 1912 BEDFORD, Gerald, *Division of Veterinary Services*, P.O., *Onderstepoort*, *Pretoria*, *S. Africa*.
- 1913 † BEDFORD, Capt. H. W., *W.T.R. Laboratories*, *Khartoum*, *Sudan*.
- 1899 † BEDWELL, Ernest C. (V.-PRES., 1922; COUNCIL, 1917–19, 1922–4, 1929–31), *Bruggen*, *Brighton-road*, *Coulsdon*, *Surrey*.
- 1920 † BEESON, C. F. C., *Indian Forest Service*, *Forest Research Institute*, *Dehra Dun*, *U.P.*, *India*.
- 1904 BENGTSSON, Simon, Ph.D., *Universitetsbibliothek*, *Lund*, *Sweden*.
- \*1915 BENHAM, Prof. W. B., M.A., D.Sc., F.R.S.
- 1933 † BENSON, H. J. Craufurd, B.Sc., 45, *Gordon-place*, *Kensington*, W. 8.
- 1925 † BENSON, R. B., M.A., *British Museum (Nat. Hist.)*, *Cromwell-road*, *S.W. 7*.
- 1913 † BEST-GARDNER, Charles C.
- 1885 † BETHUNE-BAKER, George T., F.L.S., F.Z.S. (PRES., 1913–14; V.-PRES., 1910–11, 1915; COUNCIL, 1895, 1910–12, 1915, 1919–21), 9, *Eversfield-road*, *Eastbourne*.
- 1935 BINNS, H. R., M.A., P.O. Box 96, *Blantyre*, *Nyasaland*, *E. Africa*.
- 1891 † BLABER, W. H., F.L.S., *White Cottage*, *Cootham*, nr. *Pulborough*, *Sussex*.
- 1904 † BLAIR, Kenneth G., D.Sc. (COUNCIL, 1918–20, 1932–3), *Claremont*, 120, *Sunningfields-road*, *Hendon*, N.W. 4.
- 1903 BOGUE, W. A., 34, *Handen-road*, *Lee*, S.E. 12.
- 1921 † BOLTON-KING, E., *Christ Church*, *Oxford*.
- 1902 † BOSTOCK, E. D., *Alicombe*, *Pelham-gardens*, *Folkestone*, *Kent*.
- 1921 BOUCK, Baron J., *Springfield*, *South Godstone*, *Surrey*.
- 1894 † BOWLES, E. Augustus, M.A., *Myddelton House*, *Waltham Cross*.
- 1921 † BOX, H. E., *Antigua Sugar Factory*, *St. John's*, *Antigua*, *B.W.I.*
- 1910 BOYD, A. Whitworth, *Frandle House*, nr. *Northwich*, *Cheshire*.
- 1920 BOYD, Lt.-Col. J. E. M., M.C., *Pendavey*, *Birchington-on-Sea*, *Kent*.
- 1905 BRACKEN, Charles W., B.A., 16, *De la Hay Villas*, *Plymouth*.
- 1919 † BRADLEY, Prof. J. Chester, M.Sc., Professor of Entomology and Curator of Invertebrate Zoology, *Cornell University*, *Ithaca*, *New York*, *U.S.A.*

- 1920 † BRENCHELEY, Dr. Winifred E., D.Sc., F.L.S., *Rothamsted Experimental Station, Harpenden, Herts.*
- 1930 BREYER, Adolfo (Jun.), *Florida 414, Buenos Aires, Argentina.*
- 1930 BREYER, Alberto, *Florida 414, Buenos Aires, Argentina.*
- 1894 † BRIGHT, P. M., *Nethercourt, 60, Christchurch-road, Bournemouth.*
- 1924 † BRINDLEY, Mrs. M. D., 25, *Madingley-road, Cambridge.*
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- 1932 BROWN, F. Martin, *Fountain Valley, Colorado Springs, Colo., U.S.A.*
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- 1910 BROWNE, H. B., M.A., *Woodleigh House, Aislaby, Sleights S.O., Yorks.*
- 1909 † BRYANT, Gilbert E., 82, *Rivermead Court, Hurlingham, S.W.*
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- 1929 BURDETT, E. F., 180, *High-street, Lowestoft, Suffolk.*
- 1896†† BURR, Malcolm, D.Sc., F.G.S., A.R.S.M. (V.-PRES., 1912; COUNCIL, 1903-4, 1910-12), *United Univ. Club, Pall Mall East, S.W. 1; Trans. to:—Moscow, Petrovskaja Agricultural Academy, Prof. V. F. Boldyrev.*
- 1920 BURRAS, A. E., 3, *Connaught-road, North End, Portsmouth.*
- 1909 † BURROWS, The Rev. C. R. N., 2, *West Hill, Fairview-avenue, Stanford-le-Hope, Essex.*
- 1932 BURTT, B. D., *Tsetse Research Dept., Old Shinyanga, Tanganyika Territory.*
- 1933 BURTT, E., B.Sc., D.I.C., *Tsetse Research Dept., Old Shinyanga, Tanganyika Territory.*
- 1922 † BUSHBY, L. C., 11, *Park-grove, Bromley, Kent.*
- 1920 † BUSHELL, Capt. H. S., *Ravensholt, Harrow-on-the-Hill.*
- 1922 BUTLER, A. E., *c/o Westminster Bank, Ltd., Clevedon, Somerset.*
- 1914 † BUTTERFIELD, R., *Curator, Corporation Museum, Keighley, Yorks.*
- 1912†† BUXTON, Prof. P. A., M.A. (COUNCIL, 1926-8, 1934- ), *Grit Howe, Gerrards Cross, Bucks.*
- 1933 † BYTINSKI-SALZ, Dr. H., *Istituto di Zoologia R. Università, Padova, Italy.*

1917-1924, 1934:

- CAMERON, A. E., M.A., D.Sc., *Dept. of Entomology, University of Edinburgh, 10, George-square, Edinburgh 8.*
- 1932 † CAMERON, E., B.Sc., *Farnham House Laboratory, Farnham Royal, Bucks.*
- 1902 † CAMERON, Malcolm, M.B., R.N. (COUNCIL, 1919-20), 15, *Teesdale-road, Leytonstone, E. 11.*
- 1923 † CAMERON, W. P. L., *Wellcome Tropical Research Laboratories, Khartoum, Sudan.*
- 1923 † CAMPBELL-TAYLOR, J. E., *Afterwards, Dudsbury Cross, nr. Wimborne, Hants.*
- 1910 † CARLIER, E. Wace, M.D., F.R.S.E., *Morningside, Granville-road, Dorridge, Warwickshire, and The University, Birmingham.*
- 1924 † CARLIER, S. E. Wace, *Morningside, Granville-road, Dorridge, Warwickshire.*



- 1910†† CARPENTER, Prof. G. D. Hale, D.M., M.B.E. (COUNCIL, 1934- ), Hope Professor of Zoology (Entomology) in the University of Oxford, *Penguelle, Hid's Copse-road, Cumnor Hill, Oxford.*
- 1895 ‡ CARPENTER, George H., D.Sc., M.R.I.A. (COUNCIL, 1931-2), *Rotherwood, St. Catherines, Broxbourne, Herts.*
- 1915 CARR, Prof. J. W., M.A., F.L.S., F.G.S., Hon. F.R.H.S., Emeritus Professor of Biology in University College, *Mapperley Edge, Private-road, Sherwood, Nottingham.*
- 1912 CARTER, H. F., *The Office of Medical Entomologist, Torrington-square, Colombo, Ceylon.*
- 1906 ‡ CARTER, H. J., B.A., *Garrawillah, Kintore-street, Wahroonga, Sydney, N.S.W.*
- 1934 CASTLE, The Rev. A. R., *The Manse, 129, Old Tovil-road, Maidstone, Kent.*
- 1921 ‡ CATOR, Douglas, 13, *Westminster-mansions, Gt. Smith-street, S.W. 1.*
- 1889†† CAVE, Charles J. P.
- 1920 ‡ LE CERF, F., *Museum National d'Histoire naturelle, 45bis, rue de Buffon, Paris V<sup>e</sup>.*
- 1914 ‡ CHAMPION, H. G., M.A., *Forest Research Institute, Dehra Dun, U.P., India.*
- 1919 CHATTERJEE, N. C., B.Sc., *Forest Research Institute, Dehra Dun, U.P., India.*
- 1923 CHATTERJEE, S. N., *Forest Research Institute, Dehra Dun, U.P., India.*
- 1897 ‡ CHAWNER, Miss Ethel F., *The White House, Leckford, Stockbridge, Hants.*
- 1913 ‡ CHEAVIN, W. H. S., F.C.S., F.R.M.S., 19, *Rosendale-road, W. Dulwich, S.E. 21.*
- 1919 ‡ CHEESMAN, Miss L. Evelyn, 98, *Redcliffe-gardens, S.W. 10.*
- 1920 ‡ CHEETHAM, C. A., *Austwick, via Lancaster.*
- 1933 CHORLEY, J. K., *Agricultural Laboratory, P.O. Box 387, Salisbury, S. Rhodesia.*
- 1935 CHORLEY, T. W., *P.O. Box 265, Kampala, Uganda.*
- 1933 ‡ CHRISTOPHERS, Col. Sir S. R., I.M.S., F.R.S., *London School of Hygiene and Tropical Medicine, Keppel-street, W.C. 1.*
- 1889 CHRISTY, William M., M.A., F.L.S., *Watergate, Emsworth.*
- 1909 CLARK, Lt.-Col. C. Turner, F.Z.S., *The Hutch, Shirley Warren, Southampton.*
- 1929 CLARKSON, Miss Lucy I., *Apipucos, Recife (Pernambuco), Brazil.*
- 1935 ‡ CLAY, Miss Theresa, B.Sc., 18, *Kensington Park-gardens, W. 11.*
- 1914 ‡ CLEARE, L. D., Jr., *Dept. of Agriculture, Georgetown, British Guiana.*
- 1908 CLUTTERBUCK, C. Granville, *Heathside, 23, Heathville-road, Gloucester.*
- 1904 ‡ COCKAYNE, E. A., M.A., M.D., F.R.C.P. (V.-PRES., 1927; COUNCIL, 1915-17, 1926-8), 116, *Westbourne-terrace, W. 2.*
- 1920 COCKCROFT, T., 111, *Owen-street, Wellington South, New Zealand.*
- 1917 ‡ COCKERELL, Prof. T. D. A., *University of Colorado, Boulder, Colorado, U.S.A.*
- 1934 COGHILL, D., *Merebank, S. Coast, Natal, S. Africa.*
- 1914 COLEMAN, Leslie C., *Dept. of Botany, University of Toronto, Toronto, Canada.*
- 1922 ‡ COLLENETTE, C. L., F.R.G.S. (V.-PRES., 1935; COUNCIL, 1934- ), 112, *The Terrace, Richmond, Surrey.*
- 1899 ‡ COLLIN, James E. (PRESIDENT, 1927-8; V.-PRES., 1913, 1923, 1929; COUNCIL, 1904-6, 1913-15, 1923-5, 1929), *Raylands, Newmarket.*
- 1924 ‡ COOKE, Brig.-Gen. B. H., C.M.G., C.B.E., D.S.O., *Inniscrone, Datchet, Bucks.*
- 1926 COOPER, Mrs. J. Omer, B.A., 11, *Belle Grove-terrace, Spital Tongues, Newcastle-on-Tyne.*

- 1921 COOTE, F. D., 32, *Wickham-avenue, Cheam, Surrey.*
- 1933 ‡ CORBET, A. S., D.Sc., Ph.D., F.I.C., *Iona, Cookham Rise, nr. Maidenhead, Berks.*
- 1924 CORBETT, G. H., B.Sc., Government Entomologist, S.S. and F.M.S., *Kuala Lumpur, F.M.S.*
- 1921 ‡ CORPORAAL, J. B., *Zoological Museum, Plantage Middenlaan 53, Amsterdam, C.*
- 1924 ‡ COTT, Hugh B., M.A., F.R.P.S., F.Z.S., *Dept. of Zoology, University, Glasgow.*
- 1932 COTTAM, R., *Leestack, Birch-avenue, Wilmslow, Cheshire.*
- 1920 ‡ COTTERELL, G. S., A.R.C.S., Box 23, *Dept. of Agriculture, Aburi, Gold Coast, B.W.A.*
- 1928 COVELL, Lt.-Col. G., M.D., D.P.H., D.T.M. & H., I.M.S., *Director, Pasteur Institute of India, Kasauli, Punjab, India.*
- 1931 COWLAND, J. W., *Gezira Research Farm, Wad Medani, Sudan.*
- 1931 ‡ COWLEY, John, M.A., *Norwood Hill House, Horley, Surrey.*
- 1931 ‡ COX, B. C., *The Fishery, Mapledurham, Oxon.*
- 1923 ‡ COX, L. G., 9, *Chichester-terrace, Brighton.*
- 1933 ‡ COX, W. E., 98, *Marlborough-road, Cardiff.*
- 1920 ‡ CRABBE, E., 14, *Burcote-road, Wandsworth Common, S.W. 18.*
- 1895 ‡ CRABTREE, B. H., *Highfield, Trafford-road, Alderley Edge, Cheshire.*
- 1919 CRAMPTON, Prof. G. *Chester, Massachusetts Agricultural College, Amherst, Mass., U.S.A.*
- 1935 ‡ CRASKE, J. C. B., 57, *Cornwall-gardens, S.W. 7.*
- 1922 ‡ CRAWFORD, Wm. Monod, B.A., *Orissa, Marlborough-park, Belfast.*
- 1928 ‡ CREWDSON, R. C. R., *The Grange, Delamere, Northwich, Cheshire.*
- 1919 ‡ CUMMING, B. D., *Whitman's Wood, West Clandon, Surrey.*
- 1927 CUNLIFFE, N., M.A., D.Sc., *The School of Rural Economy, University of Oxford.*
- 1908 ‡ CURTIS, W. P., 70, *Princess-road, Bournemouth.*
- 1933 CUTHBERTSON, A., *Agricultural Laboratory, P.O. Box 387, Salisbury, S. Rhodesia.*
- 1930 DAINTREE, A. C., *P.O. Box 292, Lourenço Marques, Portuguese East Africa.*
- 1929 ‡ DALTRY, H. W., *Bar Hill, Madeley, nr. Crewe.*
- 1928 DAMPF, Dr. A., Chief Government Entomologist, *Avenida Insurgentes, 171, Mexico, D.F., Mexico.*
- 1935 DANIEL, A. R., *Alwyn, Dove House-lane, Solihull, nr. Birmingham.*
- 1886-1922, 1934 :  
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- 1907 ‡ TILLYARD, R. J., M.A., D.Sc., F.R.S., F.L.S., Chief Commonwealth Entomologist, *G.P.O. Box 18, Canberra, F.C.T., Australia.*
- 1920 TINSLEY, Joseph, *West of Scotland Agricultural College, Morven, Seafield-road, Ayr.*
- 1897 ‡ TOMLIN, J. R. le B., M.A. (COUNCIL, 1911-13), 23, *Boscobel-road, St. Leonards-on-Sea.*
- 1907 ‡ TONGE, Alfred Ernest (COUNCIL, 1915-17, 1927-9), *Aincroft, Reigate, Surrey.*
- 1934 TONGYAI, M. R. Chakratong, *Bangsue, Bangkok, Siam.*
- 1914 DE LA TORRE BUENO, J. R., *Tucson, Arizona, U.S.A.*
- 1928 ‡ TOTTENHAM, Rev. C. E., M.A., *The Rectory, Rous Lench, nr. Evesham, Worcs.*
- 1906 ‡ TULLOCH, Brig.-Gen. J. B. G., C.B., C.M.G., *Hill-court, Abergavenny, Monmouthshire.*
- 1895 ‡ TUNALEY, Henry, *Castleton, Searle-road, Farnham.*
- 1910 TURATI, Conte Emilio, 4, *Piazza S. Alessandro, Milano, Italy.*
- 1930 ‡ TURK, F. A., F.Z.S., *Tenter Den, Roscroggan Hill, Tehidy, nr. Camborne, Cornwall.*
- 1898 ‡ TURNER, A. J., M.D., *Wickham-terrace, Brisbane, Australia.*
- 1893 ‡ TURNER, Henry Jerome, F.R.H.S. (V.-PRES., 1930; LIBRARIAN, 1921-9; COUNCIL, 1910-12, 1930), *Latemar, West Drive, Cheam, Surrey.*
- 1931 TWEDDIE, R. B., *Highwood Apiary, Chartridge, Chesham, Bucks.*
- 1923 ‡ TWIDLE, A., N.S.A., *The Rowans, Godstone Green, Surrey.*
- 1893 ‡ URICH, F. W., C.M.Z.S., 158, *Charlotte-street, Port of Spain, Trinidad, B.W.I.*
- 1920 ‡ UVAROV, B. P., *British Museum (Natural History), S. Kensington, S.W. 7.*
- 1933 VAJROPALA, K., B.Sc., Ph.D., A.R.C.S., D.I.C., *Biology Dept., Chulalongkorn University, Bangkok, Siam.*
- 1922 ‡ VAN SOMEREN, V. G. L., C.M.Z.S., *Box 658, Nairobi, Kenya Colony.*
- 1933 VAN SON, G., M.Sc., *Transvaal Museum, Pretoria, S. Africa.*
- 1924 ‡ VAN STRAUBENZEE, Brig.-Gen. Casimir C. H., C.B., C.B.E., 18, *Basil-mansions, Basil-street, S.W. 3.*
- 1932 VARDÉ, Prof. V. P., D.Sc., Professor of Biology, *Samaldas College, Bhavnagar (Kathiawar), India.*
- 1934 ‡ VARLEY, G. C., B.A., *Dept. of Entomology, University, Cambridge.*
- 1904 ‡ VAUGHAN, Capt. W., *Albion Press, 501-2, Princess-street, Winnipeg, Manitoba, Canada.*
- 1914 ‡ VEITCH, Robert, B.Sc., *Dept. of Agriculture, Brisbane, Australia.*
- 1935 VERITY, R., M.D., 36, *via Masaccio, Florence, Italy.*
- 1897 ‡ WAINWRIGHT, C. J. (COUNCIL, 1901, 1912-14), 172, *Hamstead-road, Handsworth, Birmingham.*
- 1918 WALFORD, L. J., *The Cavalry Club, Piccadilly, W.*



- 1935 WALKER, Dr. E. M., Professor of Invertebrate Zoology, *Dept. of Biology, University of Toronto, Toronto, Canada.*
- 1935 WALKER, G. R., M.D., Ch.B., D.T.M., *The Sir Alfred Jones Research Laboratory, Tower Hill, Freetown, Sierra Leone.*
- 1921 WALKER, S., 53, *Micklegate Hill, York.*
- 1910 ‡ WARD, John J., *Natura, Woodland-avenue, Coventry.*
- 1908 ‡ WARREN, B. C. S., 3, *Augusta-mansions, Folkestone, Kent.*
- 1901 † WATERHOUSE, G. A., D.Sc., B.E., *Allowrie, Stanhope-road, Killara, New South Wales, Australia.*
- 1921 WATKINSON, The Rev. G., M.A., *Woodfield, Hipperholme, nr. Halifax.*
- 1918 WATSON, J. H., 20, *St. Paul's-road, Withington, Manchester.*
- 1933 WATTISON, J. T., F.G.S., 37, *Rua da Circumvalação, Senhora da Hora, Portugal.*
- 1934 ‡ WELCH, A. E., 100, *Holmefield-court, Belsize-grove, N.W. 3.*
- 1933 ‡ WELTI, A., *Roswyn, 141, Perry Vale, Forest Hill, S.E. 23.*
- 1933 ‡ WELTI, Mrs. I. M. T., *Roswyn, 141, Perry Vale, Forest Hill, S.E. 23.*
- 1923 ‡ WEST, Lieut.-Col. R. M., M.D., D.S.O., O.B.E., *Wootton Bridge, Isle of Wight.*
- 1935 ‡ WESTROPP, F. G. M., 19, *Church-row, N.W. 3.*
- 1910 ‡ WHITE, E. Barton, M.R.C.S., *The Mental Hospital, Fishponds, Bristol.*
- 1918 ‡ WHITE, Ronald Senior, F.R.S.E., *Malariologist, Bengal-Nagpur Railway House, Calcutta, India.*
- 1930 WHITEHOUSE, Prof. Beckwith, 62, *Hagley-road, Birmingham.*
- 1923 ‡ WHITFIELD, F. G. Sarel, *Kitchener School of Medicine, Khartoum, Sudan.*
- 1913 †‡ WHITLEY, P. N., *Brantwood, Halifax* ; and *New College, Oxford.*
- 1913 † WHITTAKER, Oscar, F.R.M.S., *Rivington, Teignmouth-road, Torquay, Devon.*
- 1911-1920 :
- ‡ WHITTINGHAM, Rt. Rev. W. G., Lord Bishop of St. Edmundsbury and Ipswich, *The Bishop's House, Ipswich.*
- \*1917 ‡ WICKHAM, Rev. Prebendary A. P.
- 1926 ‡ WIGGLESWORTH, V. B., M.A., B.Ch., M.D. (V.-PRES., 1934 ; COUNCIL, 1932-4), *Hedgeside, Holtspur End, Beaconsfield, Bucks.*
- 1923 WIGHTMAN, A. J. C., *Aurago, Pulborough, Sussex.*
- 1922 ‡ WILKINSON, D. S., 8, *Manson-place, S.W. 7.*
- 1923 WILKINSON, Harold, *Dept. of Agriculture, Nairobi, Kenya Colony.*
- 1911 ‡ WILLIAMS, C. B., M.A., Sc.D. (COUNCIL, 1934- ), *Rothamsted Experimental Station, Harpenden, Herts.*
- 1915 ‡ WILLIAMS, H. B., LL.D., *Redmayes, 79, Broad-lane, Hampton, Middx.*
- \*1921 ‡ WILLMER, E. Nevill, *School of Experimental Physiology, Cambridge.*
- 1934 WILSON, F., *European Parasite Laboratory, Avenue Godillot, Hyères, France.*
- 1935 WINDRED, G. L., B.Sc., *The Colonial Sugar Refining Co., Ltd., Lautoka, Fiji.*
- \*1915 WINN, A. F.
- 1928 WINTER, A. E., 148, *West End-avenue, Harrogate.*
- 1926 ‡ WOMERSLEY, H., 36, *Wattle-street, Fullarton Estate, Adelaide, S. Australia.*
- 1928 ‡ WOOD, Hugh, *Rollrights, Milford-on-Sea.*
- 1919 ‡ WOOD, H. Worsley, 37, *De Freville-avenue, Cambridge.*
- 1905 WOODBRIDGE, F. C., *Briar Close, Latchmore-avenue, Gerrards Cross S.O., Bucks.*
- 1925 ‡ WOODCOCK, A. J. A., M.Sc., *Rhianva, 65, Rock-avenue, Gillingham, Kent.*

- 1935 WOODHOUSE, L. G. O., *The Surveyor-General's Office, Colombo, Ceylon.*  
 1925 ‡ WOODWARD, Capt. G. C., R.N., *The Red House, 10, Bordyke, Tonbridge, Kent.*  
 1921 WOOLETT, G. F. C., *Parklands, Merrow, Guildford, Surrey.*  
 1926 ‡ DE WORMS, C. G. M., Ph.D., M.A., A.I.C., *Milton Park, Egham, Surrey.*  
 1922 WRIGHT, A. E., *Brunleigh, Kent Bank-road, Grange-over-Sands.*  
 1927 ‡ WRIGHT, Rev. W. Rees, M.Sc., *The Rectory, Lochgilphead, Argyle.*



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The same, the whole cost of the Society's Charter.

\* It has not always been possible to find the exact purpose for which the earlier money gifts were intended, but they appear to have been usually in support of the publications.

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## 1930.

R. W. LLOYD, the entire cost of the panelling and ceiling in the new Meeting Room, together with the Presidential Desk and Chair.

R. ADKIN, the entire cost of the Epidiascope and screen.

Dr. K. JORDAN, £50 donation in aid of building the new Meeting Room.

H. WILLOUGHBY ELLIS, £50 donation in aid of building the new Meeting Room.

Dr. R. STEWART MACDOUGALL, £110, being the cost of a bookcase and table for the Library, in memory of his wife.

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E. A. ELLIOTT, in continuation of his practice since 1908, Wytzman's "Genera Insectorum."

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1932.

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Fleet-Paymaster T. BAINBRIGGE FLETCHER, R.N., £35.

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Prof. W. A. F. BALFOUR-BROWNE, F.R.S.E., £20.

Dr. H. ELTRINGHAM, F.R.S., £20.

1933.

Donations to Centenary Fund—

Prof. E. B. POULTON, F.R.S., £100.

Prof. W. A. F. BALFOUR-BROWNE, F.R.S.E., £20, making with a similar donation in 1932, £40 in all.

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1934.

THE ROYAL SOCIETY, £75, towards the cost of Dr. O. W. Richards' paper.

1935.

R. ADKIN (bequest) £250 and a selection of the books from his Library.

R. W. LLOYD, £150, for the Library.

C. B. HOLMAN-HUNT (bequest) £100, for the Library.

THE ROYAL SOCIETY, £70, towards the cost of Prof. G. D. Hale Carpenter's paper.

FLEET-PAYMASTER T. BAINBRIGGE FLETCHER, R.N., a selection of the books from his Library.

Wednesday, 20th November, 1935.

Sir EDWARD POULTON, F.R.S., Hon. Life President, in the Chair.

*Elections.*

The following were elected Fellows of the Society :—GEORGE A. BISSET, Department of Entomology, British Museum (Natural History), Cromwell Road, S.W.7; E. B. BRITTON, 99, Cornwall Road, Westbourne Park, W.11; K. H. CHAPMAN, The Knowle, Knowles Hill, Newton Abbot, S. Devon; Miss THERESA CLAY, B.Sc., 18, Kensington Park Gardens, W.11; ERNEST P. HODGKIN, Riverdene, Broxbourne, Herts, and The Institute for Medical Research, Kuala Lumpur, Federated Malay States.

*Nominations.*

The SECRETARY read the following list of Fellows nominated by the Council as Officers and Council for the ensuing year :—

*For President* : A. D. IMMS, Sc.D., M.A., F.R.S.

*For Treasurer* : FRANCIS HEMMING, C.B.E.

*For Secretary* : A. W. McKENNY-HUGHES, D.I.C.

For other members of Council :—R. B. BENSON, M.A., Professor P. A. BUXTON, M.A., Professor G. D. HALE CARPENTER, M.B.E., D.M., C. L. COLLENETTE, Brig.-Gen. B. H. COOKE, C.M.G., C.B.E., D.S.O., H. WILLOUGHBY ELLIS, H. ELTRINGHAM, M.A., D.Sc., F.R.S., G. FOX-WILSON, L. G. HIGGINS, M.A., F.R.C.S., S. A. NEAVE, O.B.E., M.A., D.Sc., J. A. SIMES, O.B.E., W. H. T. TAMS, W. H. THORPE, M.A., Ph.D., C. B. WILLIAMS, M.A., Sc.D.

*Exhibits.*

The offspring of a pair of the Hawk-moth *Hyloicus pinastri* L., taken in coitu, 15 June, 1934, on a pine-trunk at Gallows Hill, 2–3 miles S. of Bere Regis, near Wareham, Dorset, by H. L. Andrewes. By Sir EDWARD POULTON.

The larvae were reared partly at Oxford, partly at St. Helens, I.W. There was a remarkable difference in the amount of the shell eaten by the just-hatched caterpillars, in some instances nothing being left except the basal part fixed to the surface on which the eggs had been laid—a more extreme result than any observed in 1933 and recorded in our *Proceedings*, 8 : 129. The change from the green pine-needle-like appearance of the earlier stages to one resembling the rough brown twigs of the pine was far less marked in many of these larvae than in the 1933 family, for the former retained in the fifth stage a considerable amount of the green colouring, detracting greatly from the procryptic effect. Another interesting difference in the 1934 family was the emergence of a male and female in the autumn of the year in which the eggs were laid. They were found when the box was inspected at St. Helens, on 9 Sept., 1934, and may have emerged a day or two earlier, but certainly not more, as shown by their fresh and unworn condition. The emergence was not only surprising because of the date but also because both sexes appeared and not males alone. The emergences in 1935 all took place at Oxford. Returning on



22 June after an absence of five days I found 4 ♂ and 2 ♀ moths in the box, including a pair *in coitu*. The condition of the specimens proved that they had only emerged on that day or on June 21 when the heat wave started. The later emergences were 3 ♂♂ on June 24, 25, and 26 respectively; 1 ♀ on June 28; 3 ♀♀ on June 29. The female found *in coitu* was kept in the hope of obtaining eggs but none was laid.

Although the moths referred to above and exhibited to the meeting show the amount of variation commonly observed in the species there was no marked difference between the 1934 and the 1935 emergences.

**A Fossorial Wasp's attempts to find its mud tube after a change in position or the removal of an adjacent conspicuous object. Observed at Tzaneen, N. Transvaal, by Botha de Meillon. By Sir EDWARD POULTON.**

These interesting observations, made by Dr. de Meillon, are described in letters written on the dates recorded at the beginning of each extract.

"22 March, 1934.—The following observations may be of interest to you in showing how much topography plays a part in enabling an insect to locate its nest.

"Next to my desk is a table on which stands a wooden box 18 in. × 24 in. and 1½ in. in height. The lid of the box contains 210 holes equidistant from one another and all the same size. I use this box for holding small tubes and keeping them upright. Some of the holes were thus occupied but only along the very edges of the box: near the centre, however, was standing a long pipette and one tube. I noticed that a mason wasp was building her mud-walled nest on the floor of the box near the pipette, and wondered how she managed to find her particular entrance hole in the lid so unerringly. During one of her journeys to collect mud I removed the pipette. The wasp returned and was completely non-plussed. She settled, I must say near the hole, but instead of walking straight to it, she wandered about for several minutes and finally located it. It seems obvious that she had previously been guided by the pipette. On her next journey I turned the box round so that her particular hole was now in a different position. This puzzled her even more than the removal of the pipette, and it was quite a quarter of an hour before she found it. She improved with each succeeding visit and after five of them went to the hole almost immediately. After these valiant efforts I was unwilling to kill her, and therefore her identity remains unknown."

Dr. de Meillon wrote on 24 May, 1934, giving the following additional data:—the diameter of the holes is 0.6 in.; the distance from the bottom of the box to the underside of the lid—1.2 in.; from the highest part of the mud tube to the underside of the lid—0.75 in. The letter also states that "any of the holes around the one in use would have given nearly as direct access to the nest. When hunting for her special entrance the wasp would enter other holes and then withdraw and often came out by some other hole without having found her nest. This was a mud tube and therefore, as you have suggested, the mouth was eventually carried one hole further away. I must admit that all my measurements have been made at a much later date, *i.e.* when the nest was already completed. At the time of my original observation the wasp was only beginning the foundations of her nest, and these had hardly risen above the floor of the box. As I left soon afterwards I cannot tell if she came to use the next hole as an entrance when the nest mouth approached it."

"7 Aug. 1934.—The wasp is a very common long-bodied insect with yellow markings on the legs but, so far as I can remember, none upon the abdomen. I examined the nest while it was being made and can definitely state that it was a longish single tube. She may, however, subsequently have built on to it.

"I have on several occasions seen a very similar insect following the wasp in question. This insect had similar but slightly exaggerated markings on the legs, was almost completely silent in flight and had a long protruding ovipositor. I therefore took it to be a parasitic species possibly parasitising the other, but could never actually see it doing anything suspicious."

"20 Sept. 1934.—I have at last been able to recover a portion of the nest of the wasp, also a larva. You may possibly be able to identify the adult from these. I am sending them under separate cover."

I submitted these materials and the author's description to my friend Mr. R. B. Benson who wrote 12 Nov. 1935 :—

"Yesterday evening I spent some time trying to puzzle out what the wasp could be. Of course you will understand when I say that the description given could equally well apply to a great number of insects, but the most likely is *Rhynchium cyanopterum* Saussure. This is a big, dark-bodied wasp of the *Odynerus* type, with yellow-marked legs, and apparently common in South Africa. It builds mud nests in holes, while most of the other possible wasps make external nests. It is not likely to be a Sphegid, such as *Sceliphron*, because the extraordinarily long and narrow pedicel at the base of the abdomen would surely have been noted by Dr. de Meillon."

My old friend Mr. Oswald H. Latter wrote 17 Nov. 1935 :—

"Botha de Meillon's observation, which I see you are communicating to the R.E.S.L. on Wednesday, reminds me of a similar observation that I made in 1908. So I have turned up the note that I made at the time, and enclose a verbatim copy of it, adding only those words that are enclosed in brackets :—

"*Pompilus plumbeus* at Braunton Burrows, Aug. 2, 1908.

"'Individual observed to hide spider in sand before leaving it to run to hole. Spider always left near some conspicuous object, e.g. small tuft of grass, dead reed, etc. Association quite evident, for if (left by) a tuft then other tufts often inspected while searching for right one; also when I moved dead reed (beside which spider had been buried), wasp was bewildered and divided in mind between actual spot (of burial) and place 8 inches off where I had put reed. On replacing reed great excitement ensued, and spider was at once exhumed.'

"The wasp's behaviour, described as 'bewildered and divided in mind,' was as follows :—She ran back from hole to the right place, but on arriving did not begin to dig—she stood still, waving her antennae. Then she started running to and fro round about the spot where the spider was buried, and presently encountered the bit of dead reed; she stopped at the reed for some seconds, but did not dig. Then she several times ran to and fro between the burial spot and the dead reed, and then ran back to her burrow. I replaced the reed during her absence.—O.H.L."

The care in studying the position of the nest and objects near it and the wasp's confusion when these were removed, or even very slightly disturbed, is described in many North American species by G. W. and E. G. Peckham in their very interesting book.\* The observations described by Dr. de Meillon are an excellent example of the behaviour of a fossorial wasp in finding its burrow or nest under conditions which lend themselves readily to experimental tests. J. H. Fabre in his experiments, especially on *Bembex rostrata*, proved the same essential importance of the stimulus provided by the entrance door, as described in his delightful style.† I venture to quote the conclusion of his account of the behaviour of the *Bembex* after he had destroyed the entrance and unroofed the tunnel of her burrow and larval chamber :—

“Such is the connection in acts of instinct; one leading to the next in an order that the most serious circumstances have no power to alter. After all, what was the *Bembex* seeking? Her larva, evidently. But to reach this larva she had to enter the burrow, and to enter the burrow she had to find the door, and the mother persists in seeking this door while the gallery lay open with provender and larva all before her. . . . Her actions are like a series of echoes, awaking one another in a fixed order, the following one only sounding when the preceding has sounded. Not because there was any obstacle; the burrow was all open, but for want of the usual entrance the first action could not take place. That decides everything; the first echo is mute, and so all the rest are silent. What a gulf between intelligence and instinct! Through the ruins of the shattered dwelling a mother guided by intelligence rushes straight to her son; guided by instinct she stops obstinately where once was the door.”

**Experiments to test the efficiency of protective adaptations in insects.** With 3 plates.  
By R. CARRICK, B.Sc.

[Communicated by Sir EDWARD POULTON, who showed lantern slides prepared by the author and briefly explained the argument of the paper, especially referring to the new and excellent plan of devising experiments to be carried on in close proximity to nests containing young birds fed by the parents.]

The paper will appear in the *Transactions*.

**Earlier descriptions of the Tineid larva *Passalactis tentatrix* Meyr.** By Sir EDWARD POULTON.

I am anxious to call attention to the following papers unfortunately omitted from the account of this inquiline larva on pp. 48–51 of our 1935 *Proceedings* :—

TRAGÅRDH, I., 1907, *Ark. Zool.*, **3** (22): 1–7, 1 pl.

SILVESTRI, F., 1920, *Bull. Lab. Zool. Portici.*, **14**: 297–302.

E.B.P. 31 Jan. 1936.

**Evidence of preferential feeding by birds in Egypt.** By Professor G. D. HALE CARPENTER.

Major S. S. Flower, O.B.E., M.B.O.U., has kindly given me the following note. “In the Asyût district of Upper Egypt in January, 1924, each set of beehives

\* 1905, *Wasps Social and Solitary*, Boston and New York, Chapter xii, on “Sense of direction”: 275.

† 1901, *Insect Life*, English translation, London: 262–270.



appeared attended by a crowd of Egyptian Swallows *Hirundo rustica savignii* Stephens. Although there were plenty of Little Green Bee-eaters about (*Merops orientalis cleopatra* Nicoll) they were not near the beehives: it appeared that the Swallows, not the Bee-eaters, were the bee-eating birds." Bee-eaters are well known to eat bees at times, but presumably in this particular instance they could obtain other food and in spite of the abundance of bees were not feeding upon them.

**Pupae and living adults of *Chionea lutescens* Lundström from Denmark.** By F. W. EDWARDS.

*Chionea* is a small genus of wingless TIPULIDAE of which three or four species are known in Europe. The biology of the genus is not well known and even the adults have been met with rather infrequently, most of the records relating to specimens found running over the surface of snow in winter.

*C. lutescens* has been recorded from Finland and Austria; it was first found in Denmark by Mr. G. P. Kryger during the winter of 1934–35. In November 1934 Mr. Kryger found specimens while digging in his carrots at Gentofte, near Copenhagen, and sent some to the British Museum for determination. Again on the 11th November, 1935, Mr. Kryger was digging up his garden, and found numerous adults and several pupae of *C. lutescens*. On this occasion he at once sent them by air-mail to the British Museum. Most of them survived the journey and were transferred to a jar with soil, dead leaves, and a growing carrot. In this jar their movements were sluggish, but when on the 20th November they were transferred for purposes of exhibition to a glass-topped box half-filled with white plaster of Paris, they became extremely active and mating was observed. Possibly the white background provided a stimulus similar to that of snow. The same activity on a white background was observed on subsequent occasions. The attitude of rest is rather peculiar, all the femora being held erect with their tips nearly touching. Most of the specimens were killed by frost about the 23rd December; one female survived until 12th January 1936, when another sharp frost killed it. Apparently no eggs were laid.

The pupae of *Chionea* were hitherto unknown. Examination of those obtained by Mr. Kryger shows that they closely resemble those of *Cladura* as described and figured by Alexander (1922, *Pomona College J. Ent. Zool.*, **14**: 1–6), thus confirming Alexander's supposition that *Chionea* is derived from *Cladura* or some very similar form. As in *Cladura*, the pupa of *Chionea* has no trace of prothoracic horns, and the cephalic crest is prominent, slightly bifid, with a strong, erect bristle on each side of it; similar bristles occur on the face and pronotum, but the abdominal bristles are much shorter than in *Cladura*; as in *Cladura* the leg-sheaths extend to the sixth abdominal segment. In view of the reduction of the antennae and the loss of wings in the adult stage it is worthy of note that the antennal sheaths are as long as in *Cladura* and that small wing-sheaths are present in the pupa of *Chionea*.

Since the specimens were received at the British Museum Mr. Kryger sent further material to Mr. H. Audcent, together with the following letter regarding the occurrence of *C. lutescens* in Denmark:—

"1. Many years ago my late friend Mr. Klöcker, one day in the fall, put some honeycomb from a deserted beehive on the lawn in his garden. It was only by

chance he put the honeycomb in the grass, he had no intention of trapping insects in the cells. Some days later he went to remove the wax cells when he discovered a number of apterous flies in the cells. He determined the flies as *Chionea araneoides* Schin. (*Faun. Austr.* : 575-6). As Mr. Klöcker was not a fly-collector himself he exchanged all his specimens partly with the Zoological Museum in Copenhagen, partly with some German insect dealers.

"Since that time I have again and again tried to catch *Chionea* in honeycombs in my garden but I have never succeeded. Mr. Klöcker's garden was in the southern outskirts of Copenhagen, mine is in the northern.

"2. 18 Nov. 1934.—I was digging my garden before the winter set in. While picking up carrots from a small plot (2 m.  $\times$  1 m.) I saw a curious 'spider' on the ground. I caught it and found it was the long-searched-for *Chionea*. The plot contained about 70 specimens. They emerged from all sorts of small hollows especially from the tunnels of earthworms. Without doubt the flies are in the daytime subterranean in habit. I have never seen any specimens by daylight, though I am very well aware which insects are to be found in my garden.

"3. The species. We in Copenhagen do not express an opinion on the species, for since Lundbeck's retirement we have no Dipterist in this town. But my friend Peder Nielsen, librarian in Silkeborg, Jutland, tells me (10.ix.35): 'I am now able to tell you the name of your *Chionea*. I have borrowed the type of *Chionea lutescens* Lundst. from the Museum in Helsingfors (Finland) and can ascertain that your specimens all belong to this species. Again all specimens from Mr. Klöcker's catch (in the Copenhagen Museum) are in like manner *C. lutescens* Lundst.'

"Many times this fall I looked for *Chionea* in my garden but I have not seen any more.

"4. To-day (11.xi.35) I tried again with the spade for *Chionea*. In a bare plot (2 m.  $\times$  1 m.) where last fall I buried some rubbish from the garden (twigs, leaves, etc., which was all nearly decayed), I found 15 *Chionea*, some pupae and one pupa with larval skin attached. All this material was sent to Dr. Edwards by air-mail. Tell Dr. Edwards not to forget the larval skin in one of the tubes. Perhaps he may use it for purposes of description. It seems that the larvae have been living in the decaying rubbish. One male and one female were *in copula* in the earth. It is then likely that copulation takes place late in the fall, that the imagoes die before the winter, while the eggs hibernate. The time for breeding seems to be the middle of November, anyhow I was rather early to-day or I should not have found any pupae. Perhaps we have two broods of *Chionea* here in Denmark, one in summer and one in fall, but I do not know anything about that.

"16.xi.35. On three evenings in the last week I have been in my garden with a strong searchlight to look for *Chionea*, but I have seen none."

To this Mr. Audcent adds :

("Here endeth Mr. Kryger's letter, but, as you know, he sent me some *Chionea* dated 17.xi.35, so I presume he found some on the following day, though he does not mention the fact in this letter which was dated 16.xi.35 and despatched on 3.xii.35.)

"I told you that I had received some *Chionea* presumably alive. Alas! they were all dead, having taken *five* days to reach me by *air-mail*. Oh! those *Customs*!

"M. Séguéy tells me that the French *Chionea arancoides* is found in runs of small mammals."

**Occurrence of *Liponeura vogesiaca* Hub. in the Pyrenees, with remarks on the synonymy of some other European species of *Liponeura* (Diptera, BLEPHAROCERIDAE). By F. W. EDWARDS.**

Although the family BLEPHAROCERIDAE, and in particular the genus *Liponeura*, is widely distributed in the mountain ranges of Europe, it would seem that no records have hitherto been published regarding the occurrence of members of this family in the Pyrenees.

Attendance at the sixth International Congress of Entomology at Madrid gave me an opportunity of crossing the Pyrenees and incidentally searching for these flies in September 1935, and I was successful in obtaining specimens at two places: near the Port de Siguer above Lo Serrat, Andorra, and below the Port de Siguer in the gorge above Siguer, Arriège. In the former locality a few males were taken on boulders in the stream, and in the latter large numbers of males and a few females were found flying over the stream at the narrowest part of the gorge where it is spanned by a bridge.

Examination of the specimens shows that all are *Liponeura vogesiaca* Hub., the determination being rendered certain by reference to the recent monograph by Mannheims,\* a work in which for the first time excellent figures are given of the male genitalia of most of the European BLEPHAROCERIDAE. The male hypopygium of the Pyrenean specimens agrees closely with Mannheims' figures, but there is a small difference in the females; according to Mannheims there is in this sex no basal swelling (epicondyle) on the last tarsal segment, but in Pyrenean females this swelling is almost as pronounced as in the males. Perhaps this may indicate a tendency in *L. vogesiaca*, as in some other species of *Liponeura*, to the production of local races.

*L. vogesiaca*, first described from the southern Vosges in 1927, has since been found in the Riesengebirge, and it is probable that it has a wide distribution in Europe, having been confused with the allied *L. brevirostris* Lw. The British Museum possesses only a single specimen determined (by Bezzi) as *L. brevirostris*, this being from Rabenau (Saxony), vii.1892. Re-examination of this specimen shows that it also is *L. vogesiaca*, as now fully redescribed by Mannheims.

I take this opportunity of adding some remarks on the synonymy of two other species of the genus *Liponeura*. In 1928 † I recorded *Liponeura decipiens* Bezzi and *L. bischoffi* Edw. from Corsica, the former being determined by comparison with a paratype of Bezzi's, and the latter being a renaming of *L. decipiens minor* Bischoff, the name *minor* being preoccupied; I stated that *L. decipiens* seemed most nearly related to *L. belgica* and *L. bischoffi* to *L. brevirostris*. Subsequently Bischoff ‡ criticised my conclusions, stating that my *L. decipiens* was wrongly determined and was really a variety of *L. belgica* which he renamed *L. belgica edwardsi*, and that

\* Mannheims, B. J., 1935, Beiträge zur Biologie und Morphologie der Blepharoceriden (Dipt.), *Zool. Forsch. Leipzig*, 2.

† Edwards, F. W., 1928, The Nematocerous Diptera of Corsica. *Encycl. ent. Diptera*, 12: 175-179.

‡ Bischoff, W. C. M., 1930, Neues über paläarktische Blepharoceriden. *Zool. Anz.*, 92: 9-17.



*L. bischoffi* was the true *L. decipiens*. Bischoff's views are quoted and apparently accepted by Mannheims. I have, however, no doubt whatever that Bischoff was mistaken; his error was perhaps due to having received from Bezzi a specimen of *vogesiaca* or *brevirostris* which had been accidentally and wrongly labelled *decipiens*. Bischoff evidently did not appreciate the striking differences in coloration between *brevirostris* (or *vogesiaca*) and *decipiens* which are well described by Bezzi in his monograph,\* *decipiens* being essentially a yellow species and *brevirostris* a black one. Moreover, the figures of the genitalia given by Bezzi, though very crude, are sufficiently conclusive, as they do represent roughly the appearance of these parts in the dry specimens. The Italian and Corsican examples of *decipiens* in the British Museum agree well with Bezzi's description.

Comparison of these Italian and Corsican specimens of *L. decipiens* with Mannheims' figures shows conclusively that Bischoff was correct in regarding them as representing at most a variety or race of *L. belgica*. One might almost go further and say that they are hardly to be distinguished from *L. belgica* as described and figured by Mannheims. The correct synonymy of the three species may therefore be stated as follows:—

1. *Liponeura decipiens* Bezzi 1913, Edwards 1928.  
Syn. *belgica* Bischoff 1924, Mannheims 1935.  
*belgica edwardsi* Bischoff 1930.
2. *Liponeura vogesiaca* Hubault, 1927, Mannheims 1935.  
Syn. *brevirostris* Bezzi 1913 (? nec Loew).
3. *Liponeura bischoffi* Edwards 1928.  
Syn. *decipiens* Bischoff 1924 (nec Bezzi); Mannheims 1935.  
*decipiens minor* Bischoff 1925 (nec *L. cinerascens minor*, Bischoff 1922).

#### Papers.

The following papers were read:—

"Feeding habits of adult Lepidoptera Heteroneura." By M. J. NORRIS (Mrs. O. W. RICHARDS).

"Uganda Simuliidae." By E. G. GIBBINS.

"Descriptions of three new species of *Drepanosticta* (Odon.) from Philippine Is." By J. COWLEY.

"New Mealybugs from East Africa." By H. C. JAMES.

"A revision of the Triplectidinae (Leptoceridae Trichoptera)." By M. E. MOSELY.

"The relation of humidity and temperature to the development of three species of African locusts." By A. G. HAMILTON.

"Hymenoptera of the New Hebrides and Banks Island." By Miss L. E. CHEESMAN.

"The study and ecology of Tsetse flies in East Africa." By C. F. M. SWYNNERTON.

"The contents of the Parts and date of publication of Seitz: *Grossschmetterlinge der Erde*." By FRANCIS J. GRIFFIN.

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\* Bezzi, M., 1913, Blefaroceridi Italiani. *Bull. Soc. ent. Ital.*, **44** : 1-114.

Wednesday, 4th December, 1935.

Dr. S. A. NEAVE, O.B.E., President, in the Chair.

The SECRETARY read for the second time the nominations of the Council for Officers and Council for 1936.

*Election.*

The following was elected a Fellow of the Society :—KENNETH SMITH, A.L.A., 15, Clarence Drive, Horsforth, Near Leeds.

*Obituary.*

The death of Mr. W. G. BAINBRIDGE, elected a Fellow of the Society in 1933, was announced.

*Announcement.*

The PRESIDENT made the following announcement regarding the reorganisation of the Society's publications :—

The Council have had under examination the question whether any improvements could be made in the form of the Society's publications and whether they could be published more frequently, and, after careful consideration of the whole question, they have unanimously agreed that the following changes should be made as from the 1st January, 1936 :—

*Transactions.*

In future each paper accepted for the *Transactions* will be published as a separate part, *i.e.*, in a separate wrapper. Large papers running to, say, 200 or more pages will be published not only as separate parts but as separate volumes. All other papers will be published as part of a single volume, that is to say, they will be consecutively paged.

The Council feel that it would suit some Fellows of the Society equally well if they were to receive only taxonomic papers or only papers relating to other branches of entomology. They therefore propose to invite Fellows to indicate prior to the 31st March each year whether they desire to receive (a) all papers published in the *Transactions* or (b) only taxonomic papers or (c) only papers relating to other branches of entomology.

*The Proceedings, Stylops, and the Abstracts.*

The Council have agreed to discontinue the publication in their present form of :—

- (a) The Proceedings;
- (b) Stylops;
- (c) The Abstracts of Proceedings.

In place of these publications, the Council have arranged to publish a journal entitled "Proceedings of the Royal Entomological Society" which will in future be published in three series as follows :—

*Series A. General subjects.*

(Note : In this Series it is proposed that all papers (other than taxonomic papers) which have hitherto appeared in the *Proceedings* should in future be published, together with any other short papers dealing with general subjects that may be submitted.)

*Series B. Taxonomy* (to be published monthly).

(Note : It is proposed that this Series should be a direct continuation of *Stylops* and that it should be stated on the title page that this Series incorporates *Stylops*.)

*Series C. Journal of Meetings* (to be published before each General Meeting of the Society).

(Note : It is proposed that under this title should be published the *Abstracts* in their new form.)

Series C will be sent free of charge to all Fellows of the Society in the same way as the *Abstracts* are sent at present.

It is proposed also that copies of both series A and B should also be distributed free of charge to all Fellows of the Society. As from 1937, however, the Council propose that, while Fellows may receive both series A and B, they should be asked to indicate whether they desire to receive both, and, if not, which they desire should no longer be sent to them.

*Miscellaneous Questions.*

The Council have agreed upon certain general principles to be followed in the editing of all papers submitted for publication in the Society's publications, designed to secure a reasonable degree of uniformity in such questions as the citation of bibliographical references and similar matters.

The Council propose that Fellows of the Society who at present pay a subscription of one guinea only and who are not entitled to receive the *Transactions* shall in future receive the three series of *Proceedings*.

**Phenological Records in 1935.** By Maj. H. C. GUNTON.

*England S.E.* There has been a very gratifying increase in the number of observers who have contributed records—seventeen in all. *Diagram I\** shows these contributions, the *first date* for each species being enclosed in a rectangle and the *second and third dates* being underlined—the greatest number of early dates come from the Reading district of Berks as shown in the first column. *Diagram II\** shows the first three dates for each species and, with certain exceptions which will be referred to later, it will be seen that these dates indicate a large measure of agreement considering the number of localities involved. *Diagram III\** shows the usual record of the relation between the average dates of first appearance (1919–1934) and the dates of first appearance and the meteorological conditions for 1935. Following a very warm winter (the excess temperature in December having been 7.5° F. and in January 2.5° F.) and warm periods in February, March, April and the beginning of May, there was every inducement for early emergence which at the end of that period amounted to about three weeks. Then came the sudden and extreme



cold period in mid-May driving a wedge between adjacent insects on the list, between observers' dates for the same insect and no doubt between individuals of the same species in the same localities and causing a check back to about the average. After that a practically continuous warm period lasting from mid-June to the end of August caused forwardness which reached fifteen to twenty-five days.

Second brood dates corresponded generally with those of their progenitors.

Reverting to *Diagram II* \* further analysis of what took place before, during and after the cold periods seems to emphasise what has been pointed out in the analysis of previous years, namely the extreme sensitiveness of the insects to changes of temperature and their readiness to emerge at the earliest possible date after having been retarded—for the study of which phenomena even the weekly average temperature measure is not alone sufficient.

It will be seen that, referring to the weekly average temperature graph, apparently species 2, 4 and 5 emerged under adverse conditions during the cold spell February 24th–March 17th and species 15 and 18 under still more adverse conditions during the cold spell in May—a reference to the *daily* temperature records shows, however, that at about all these points the *minimum daily temperature* had risen to and above the average.

With regard to the after effects of the exceptionally cold spell in May, while insects which were in the pupa state at its incidence (*e.g.* the Common Blue) responded quickly and their numbers did not show any appreciable reduction, there were indications that those which were in the larval state were affected to a greater extent. That very regular insect, No. 26, the Meadow Brown, was definitely late, while insects the larvae of which feed on the oak in May, such as *Tortrix viridana*, have been reported to have suffered to a considerable extent.

Many species were comparatively scarce, but how far this fact is due to the present season and how far the preceding droughty summers have contributed, it is difficult to say.

An extension of the present phenological scheme is at present being organised with a view to throwing further light on variations in abundance.

*Other Districts.* Records from observers in other districts are also increasing and now include one in the N.W., one in the N.E., two in the S.W., and one in the Midlands. In the cases of England N.W. and N.E., the records go back for many years and a study which is now being made aims at suitable modifications of the lists to provide alternative species to a few of those in the S.E. list, which are absent, or not sufficiently common, in other districts.

**An ascent of Mount Elgon.** (Illustrated by lantern slides.) By Dr. F. W. EDWARDS.

The programme of the British Museum Expedition to East Africa (1934–35) concluded with an ascent of Mount Elgon, which was made from Kitale, on the Kenya side of the mountain, at the end of February, 1935. The arrangements were made by Mr. T. H. E. Jackson, who supplied porters from his farm at Kapretwa and himself accompanied Dr. F. W. Edwards and Dr. G. Taylor in the ascent. Several camps were made, the chief one being at an altitude of about 11,000 ft. in the heath

\* Copies of the diagrams referred to, which have not been reproduced, are available for consultation in the Society's Library.

zone. From this camp the two highest points on the crater-rim—Koitoboss and Sosion peaks, each above 14,000 ft.—were reached.

*Paper.*

The following paper was read :—

“ Odonata collected in Japan, with descriptions of three new species.” By  
F. C. FRASER.

## ANNUAL MEETING.

Wednesday, 15th January, 1936.

Dr. S. A. NEAVE, O.B.E., President, in the Chair.

Mr. A. W. McKENNY-HUGHES, Secretary, read the names of Fellows nominated as Officers and Council for the ensuing year, and announced that they had been duly elected in accordance with the Bye-Laws.

He then read the following :—

**Report of the Council, 1935.**

It is with pleasure that the Council report the completion of another successful year and the continuation of the Society's efforts to increase the services to its Fellows and to Entomology.

Early in the year the Council gave long consideration to the arrangement of the General Meetings of the Society and decided to initiate the circulation in advance of agenda papers of the meetings. This decision was made in an endeavour to meet the wishes of Fellows resident at a distance from London and anxious to know what subjects would be discussed at a given meeting, and to keep Fellows resident abroad in touch with the Society's affairs at more frequent intervals than is possible by means of the *Proceedings*. Much appreciation of this innovation has been expressed by Fellows and the Council feel satisfied that this decision has filled a long-felt want.

Later in the session the Council gave consideration to the publications as a whole, and set up a committee to report on what changes if any should be made. This committee consisted of Dr. S. A. NEAVE (President), Mr. FRANCIS HEMMING (Treasurer), Mr. A. W. McKENNY-HUGHES (Secretary), Dr. A. D. IMMS and Mr. N. D. RILEY, and the Council is deeply conscious of the efficient manner in which they carried out their work and grateful for the lucid report they presented. This report was unanimous and was adopted by the Council without change. It provides for the publication of each paper in the *Transactions* as a separate unit; for the publication of long papers as separate volumes of the *Transactions*; for the incorporation of *Stylops* with the *Proceedings*; and for the division of the *Proceedings* into :—

Series A. General Entomology.

Series B. Taxonomic Entomology, being the continuation of *Stylops*.

Series C. Journal of Meetings, being the continuation of the *Abstract of Proceedings*.

In future all the Society's publications will be issued free to Fellows.

The Committee on Generic Nomenclature has submitted a further report, which was published as Part 3 of the *Generic Names of British Insects* on 15th July, 1935. It contains a report by the sub-committee on Neuropteroid groups and a paper by Mr. J. COWLEY on the generic names of the British Odonata, with a check list of the species.

Sir GUY MARSHALL and Mr. FRANCIS HEMMING served as the Society's delegates to the Sixth International Congress of Entomology, held on September 6th-12th



at Madrid, and Mr. FRANCIS HEMMING and Mr. N. D. RILEY at the International Congress of Zoology at Lisbon in the same month.

Dr. KARL JORDAN and Professor G. D. HALE CARPENTER also acted as delegates to the Tercentenary Celebrations of the Muséum national d'Histoire naturelle, Paris, in June.

During September the Fourth Imperial Entomological Conference was held in the rooms of the Society, and on 25th September a conversazione was given by the Society to enable Fellows to meet delegates to the Conference. Exhibits were on view in the Library and Meeting Room, for the arrangement of which the Council is largely indebted to Mr. C. L. Collette.

In February it was brought to the notice of the Council that the surviving MSS. and original drawings of Jacob Hübner were for disposal. At their request the Registrar made a report on these and brought them to London for inspection. Mr. R. W. Lloyd very generously defrayed the cost of this purchase and thus secured for the Society a magnificent addition to the Library, which has now the finest collection of Hübner's works in the world.

Since the last Annual Meeting 18 (11) Fellows have died, or their deaths have been ascertained (the numbers in brackets in this and the following paragraphs indicate the corresponding figures for the previous year):—R. ADKIN, K. F. ARMSTRONG, E. B. ASHBY, W. G. BAINBRIDGE, W. BENHAM, W. G. CLUTTEN, F. A. DIXEY, E. GOODWIN, G. H. GURNEY, H. C. HAYWARD, G. B. KERSHAW, P. MARTIN, W. ORMISTON, A. L. RAYWARD, C. E. STOTT, A. H. SWINTON, J. D. WARD, and A. P. WICKHAM.

The following 13 (5) Fellows have resigned:—R. R. ARMSTRONG, the Rev. M. T. BECKETT, H. J. CRAUFURD-BENSON, H. J. FALKNER, WYNDHAM FORBES, W. JUNK, Major F. MOYSEY, R. W. PAINE, Miss E. K. PEARCE, J. S. PHILLIPS, A. SMITH, A. C. THÉRY, and A. E. TONGE.

The following 6 (5) have been removed from the list of Fellows in accordance with the Bye-Laws, Chapter XVI, Section 3:—H. O. FRANCIS, J. D. GUNDER, G. D. IRVING, A. W. J. POMEROY, J. R. SHAW, and R. B. TWEEDIE.

During the year 39 (31) Ordinary Fellows have been elected, of whom 29 have completed their obligation. This does not compensate for the losses during the year, and the total result is a slight decrease in the number of Fellows. The Society now consists of 12 Honorary Fellows, 6 Special Life Fellows and 673 Ordinary Fellows, a total of 691.

The meetings continue to be well attended, the average number of Fellows and Visitors at each being 67, an increase of 7 on the previous year.

The *Transactions* for 1935 was published in four parts on 27th June, 28th November, 20th December and 30th December respectively. The volume comprises 18 papers by 16 authors. Of these, 5 deal with Hymenoptera, 4 with Lepidoptera, 2 with Coleoptera, 2 with sense organs of insects, 1 with Hemiptera, 1 with Trichoptera, 1 with Thysanoptera, 1 with the times of activity of nocturnal insects and 1 with nesting associations of insects with birds.

The volume consists of 573 pages and is illustrated with 16 plates, and is thus well up to the average. Financial assistance has again been forthcoming from various sources.

The volume of *Proceedings* will consist of about 130 pages, illustrated by 2

plates, and several text-figures, the cost of the plates being defrayed by Mr. HUGH MAIN and Professor HALE CARPENTER.

The fourth and last volume of *Stylops* in its present form consists of 282 pages and is illustrated by numerous text-figures. It comprises 66 papers by 52 authors. Of these 25 deal with Coleoptera, 11 with Diptera, 9 with Hemiptera, 9 with Lepidoptera, 4 with Orthoptera, 4 with Hymenoptera, 3 with Thysanoptera and 1 with Psocoptera. The Imperial Institute of Entomology paid part of the cost of Dr. Duda's paper.

It is worthy of record that 250 papers appeared in the four volumes of *Stylops* published by the Society.

Much of the detailed work of the Society's business has been carried out by a Finance and Housing Committee, under the Chairmanship of Brigadier W. H. EVANS, a Publication Committee under that of Dr. A. D. IMMS, and a Library Committee under that of Dr. K. JORDAN, and the thanks of the Council are again due to those Fellows who have served on these Committees.

The Library, both as to its organisation and to its contents, has continued to make good progress during the year.

The use of the Library by Fellows has continued to be very satisfactory, the number who have borrowed books being 354, and the number of books borrowed being 883. In addition 40 books were lent to the National Central Library.

The Honorary Secretary of the Committee for the Protection of British Insects reports that the Joint Sub-committee visited Wicken Fen on 4th May to inspect the result of the cutting which had been carried out the previous summer. It was found to be satisfactory.

The representatives of the Society also attended the Annual Meeting of the Executive Committee of Wicken Fen, held at Cambridge on 19th June. At this meeting it was decided that a further eight acres should be cleared and placed at the disposal of the Joint Entomological Committee and that another eight acres in Verrall's Fen should be converted into a "litter" area during this winter, should funds be available.

The Society for the Promotion of Nature Reserves has continued the clearing of Wood Walton Fen, which suffered rather more from the drought than did Wicken Fen. A system of cross dykes has been cut through the centre of a portion of the Fen.

The Committee has received a very generous gift of a motor-driven pump from Captain E. B. PUREFOY. This will enable the water level in the dykes to be kept higher during the summer months.

*Lycaena dispar batavus* did well at both Wood Walton and Wicken Fens.

*Maculinea arion* appeared in fair numbers in N. Cornwall. It is to be regretted that, in spite of the Society's appeal to entomologists to refrain from taking this butterfly, a considerable number of collectors visited the district during the year. The Committee again contributed towards the cost of the sanctuary for this butterfly.

The Committee are endeavouring to arrange for an area on the South-East Coast which is in danger of being developed for building to be scheduled as a place of scientific interest.

The Committee would welcome information from Fellows as to any insects or localities which are in need of protection. During the year the usual close co-operation with the National Trust and the Society for the promotion of Nature Reserves has continued.

The Report was adopted on the motion of Mr. H. WILLOUGHBY ELLIS, seconded by Mr. J. E. COLLIN.

Mr. FRANCIS HEMMING, Treasurer, then read the following :—

#### **Treasurer's Report.**

In my report last January on the financial position of the Society for the year 1934, I observed that the two most important items in the income account of a Society such as ours are those in respect of annual contributions and sales of publications. I expressed the view also that, of these items, the former is, over a long period, the best index of the Society's prosperity, while the latter reflects more quickly the trend of business activity.

It is satisfactory, therefore, to find that the year 1935, which was a year of improving trade activity, witnessed an increase of no less than £373 in the receipts on account of sales of publications. This increase is in part attributable to an increased expenditure by the Society on its publications during the year, but is in part due also to improved conditions generally which have led to an increase in the actual volume of sales secured. We may, therefore, claim that the Society is taking its share in the increase of general prosperity which has marked the last twelve months.

Turning to the item in the accounts in respect of annual contributions we find that in 1935 these amounted approximately to £1340 as compared with approximately £1309 in 1934, an increase of £31. Though this increase is not large, we may, I think, regard the position as satisfactory, for a substantially larger increase would have been secured, if we had not been exceptionally unfortunate last year in losses in our numbers through the deaths of Fellows and for other causes. If the Society is to continue to progress, it is essential that its membership should show no decline. Individual Fellows can do much to help the Society in this respect by bringing the work of the Society to the notice of entomologists who are not at present Fellows and by proposing them for Fellowship.

Turning to the expenditure side of the account, there is little to which special attention need be called. By careful administration it has been possible to secure a slight reduction in "House Expenses" and to limit severely the natural tendency of "Office Expenses" to expand. The customary contribution of £80 was made under the former heading to the Repairs to Premises Account. Such increase as has occurred under the latter head is due to the normal increment in the salaries of the staff.

The allocation to the Library in 1935 amounted to £156, an increase of £10 on the amount so allocated in the previous year.

In 1935 the gross expenditure on the *Transactions* and *Proceedings* amounted to £990 as compared with £688 in 1934, an increase of £302. Donations towards the cost of papers published in these journals amounted approximately to £125 as compared with £95 in the previous year. The largest individual contribution received on this account was £70 paid by the Royal Society towards the cost of



Professor Hale Carpenter's paper on the Rhopalocera of Abyssinia, which was issued as a separate part (part 3) of the *Transactions* last month. Thus the net expenditure on the production of these journals in 1935 amounted to approximately £912, as compared with £509 in 1934, an increase of £403. A small part of this increase represents the cost of printing and distributing the *Abstracts of Proceedings*, which were started in October last. In accordance with the scheme for the reorganisation of the Society's publications, announced by the President at the General Meeting held on the 4th December last, these Abstracts will in future be issued as Series C of the *Proceedings*.

The gross cost of the journal *Stylops* was £322 in 1935, which is within a few shillings of the sum expended on this account in 1934. Subscriptions and sales amounted to approximately £136 and donations to approximately £5. The corresponding figures for 1934 were approximately £103 and £19 respectively. Thus there was in 1935 a further reduction of approximately £20 in the net cost to the Society of producing this journal. Under the scheme of reorganisation to which I have already referred, *Stylops* will in future be issued as Series B of the *Proceedings*.

In the year just closed the Income and Expenditure Account shows an excess of income over expenditure amounting to £169 8s. 6d., as compared with £3 10s. 7d. in 1934.

Part 3 of the *Generic Names of British Insects* dealing with the British Odonata was issued last year, its cost (amounting to approximately £26) being defrayed from the "Meldola Bequest Fund" in accordance with the scheme announced in my report last year.

The Library fund has been especially fortunate in the last twelve months. In the early part of last year Mr. R. W. LLOYD most generously presented to this fund the sum of £150. This gift made it possible for the Society to acquire the unique collection of printed works and manuscripts by the great German entomologist, Jacob Hübner, and his successor, Carl Geyer, which was announced by the President at the General Meeting held on the 6th March, 1935, and of which I then gave a brief preliminary account. To the Library Fund also has been credited the sum of £100 which during the year the Society received as a legacy from its Fellow, the late Mr. C. B. HOLMAN-HUNT.

Later in the year the Society received a legacy of £250 bequeathed to them free of all conditions under the will of the late Mr. ROBERT ADKIN, a former Vice-President of the Society and one of its Fellows since 1885. The Council have for the time being allocated this sum to General Reserve.

The Balance Sheet itself calls for no special comment.

It will be seen from the foregoing report that during the year 1935 the Society has been able to maintain its varied activities on the same level as in 1934 and in the amount of publications issued to exceed the level reached in that year. It has also been possible to secure for the first time for a number of years a substantial excess of income over expenditure. From the financial standpoint, the Society may, therefore, be well pleased with the year 1935.

The Report and Accounts were adopted on the motion of Dr. C. B. WILLIAMS, seconded by Mr. H. M. EDELSTEN.

The PRESIDENT then read his Address, and at its conclusion a vote of thanks

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to him, coupled with the request that it might be printed in the *Proceedings*, was moved by Dr. K. JORDAN, and carried unanimously.

A vote of thanks to the Officers for their services during the year was then passed on the motion of Prof. G. D. HALE CARPENTER, seconded by Mr. R. W. LLOYD and carried unanimously. Mr. FRANCIS HEMMING and Mr. A. W. MCKENNY-HUGHES briefly replied.

#### **Presentation to Dr. S. A. Neave.**

Mr. FRANCIS HEMMING, Treasurer, said :—

Before this meeting is adjourned, there is one further item on the agenda which it falls to my lot to move. It is concerned with a presentation to our President—Dr. SHEFFIELD AIREY NEAVE.

There are many Fellows present here to-night who could speak out of a longer personal experience of the services rendered to the Society by Dr. Neave, though, as Treasurer since 1929, I have had the advantage of working in close and daily collaboration with Dr. Neave. I have, however, another qualification to speak in your name to Dr. Neave this evening. It was seventeen years ago, in 1919, that I was elected a Fellow of this Society. In those days, as the older Fellows of the Society will recall, we had as a Society no home of our own; we were but lodgers in the house in Chandos Street of the Medical Society of London. As a body, the Society had emerged with reduced numbers, it is true, from the ordeal of the war, but with its energy and its enthusiasm unabated. It was a critical moment in its history. How was it going to develop? At that moment there was a young man who had already served three years on the Council, who, possessed of a scientific training, had already had extensive experience of entomological work in the field and who was the second in command of what was then the Imperial Bureau of Entomology. This was the man who, in a moment of good fortune, the Council nominated as one of the Secretaries of the Society. The young man of 1919 is the President of January, 1936.

For fifteen years, from 1919 to 1933, Dr. Neave has served the Society, first as Joint Secretary and later as its sole Secretary. For the last two years he has been our President.

It is not necessary to recall this evening the remarkable development which has taken place in every department of the life of the Society in the last seventeen years. Many Fellows have contributed to secure the astounding progress which has marked these years, but no one Fellow has played a larger part in the life of the Society during this period than has Dr. Neave.

It is, therefore, fitting and right that on this evening, the last on which Dr. Neave will preside over us as our President, we should gather together at once to express our gratitude to him for the great services which he has rendered to the Society, and to mark the affectionate regard in which he is held by us, his friends and colleagues.

Dr. Neave, Fellows and other friends of the Society have joined together to make a presentation to you on your vacating the presidential chair to-night after twenty years' continuous service on the Council, seventeen of which you have served as one of the Officers of the Society. We are sincerely grateful to you for the active and vigorous part which you have played in the development of our

corporate life during this period. Though we are to-night saying good-bye to you as one of our officers, we are glad to think that you will be with us on the Council for another year, and that thereafter you will be very close at hand in the Imperial Institute of Entomology. You may be sure that in the future, as in the past, we shall not fail, when the need arises, to seek your counsel and advice on questions of special moment to the Society. We in this Society are the losers by your ceasing to be one of our officers, but we realise that what is our loss is the gain to zoology at large. It is difficult in the realm of systematics to think of a work of greater practical value to students of every branch of zoology than will be the next *Nomenclator Zoologicus* of which the Zoological Society of London has appointed you Editor-in-Chief. We can well imagine the innumerable problems which face you in this great task. We who know you do not doubt that they will be overcome in the same way as were the difficulties which from time to time confronted you when you were the Secretary of the Society.

We wish all good fortune in the future both to you and to Mrs. Neave, who during your Presidency has so kindly acted as hostess at our evening receptions. We very much regret that through illness she is not able to be with us this evening. We ask you to accept a portrait of yourself which we have arranged should be painted. The portrait is not available this evening, but it will, we hope, not be very long before it is completed. In the meanwhile, I hold in my hand this book containing the signatures of those who have combined to make this presentation to you. This book, Dr. Neave, I have great pleasure in presenting to you in the name of, and by the authority of, the Fellows and other friends of the Royal Entomological Society of London.

Mr. R. W. LLOYD said :—

Speaking as one of the senior Fellows of the Society and on their behalf, it gives me great pleasure to associate myself and them with what the last speaker has said.

I have sat under a great many Presidents—25 I believe—the earliest being the late J. W. Dunning in 1884, and out of all these the names of four spring to my mind as those to whom the Society is especially indebted—J. W. Dunning, Professor Westwood, our dear old friend Poulton, and last—Dr. Neave.

All these men have done much for the Society. No one, however, had to lead its affairs through such difficult times, not so much inside but outside the Society, as our present President. He can, on quitting the chair to-night, feel that the Society never was more prosperous nor stood so high in the eyes of the world as it does to-day.

We hope that, though we lose him as President to-night, we shall, as he is still a young man, have the benefit of his experience and advice in the affairs of the Society for many years to come.

Dr. NEAVE said in reply :—

I am sure you will all agree that this is an occasion that would test the powers of even the most experienced makers of speeches, which is the last thing that I profess to be. When I was informed as to what was to happen at the end of this meeting, I contemplated preparing a brief speech. This would have necessarily been of a somewhat formal character, and I think that you would prefer me to say more spontaneously how very deeply I appreciate this generous recognition of my services that I have been able to render to our Society.



May I say, too, that the idea that these services should have been worthy of such recognition has, if possible, given me even greater pleasure than the gift itself.

While I am most grateful for the kind remarks of our Treasurer and of Mr. Lloyd, I feel that there is an element of exaggeration about them that would have been somewhat out of place if this had been one of our scientific meetings ! During the considerable number of years that I had the honour of being your Secretary, I think that my functions might have been more correctly described as those of a liaison officer between the many able and generous Fellows of the Society who were all united in the common object of promoting its advancement.

In conclusion may I repeat, both on behalf of myself and my wife, who to her great regret is not well enough to be here to-night, how very deeply grateful I am to all those of my friends who have participated in this generous gift which will be a permanent source of enjoyment to us both for the rest of our lives.

# THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

## TREASURER'S STATEMENT OF INCOME AND EXPENDITURE for the Year ended December 31st, 1953 (Presented at the Annual Meeting, 19th January, 1954)

### GENERAL FUND

#### Income

	1953	1954	1953	1954
By subscription:				
received in advance for 1953	40	40	0	0
received in 1953 for 1954	1,000	1,000	18	18
received in 1953 for previous years	8	8	0	0
	1,008	1,008	0	0
Less subscriptions in arrears at 31st December, 1953	55	55	0	0
	1,053	1,053	0	0
4 1/2% subscriptions in arrears at 31st December, 1953	85	85	0	0
	1,138	1,138	0	0
Admission fees	474	474	0	0
Publications	95	95	0	0
donations towards cost	124	124	0	0
dividends on investments (gross)	400	400	0	0
income from sub-committee	55	55	0	0
contributions by sub-committee towards house expenses	250	250	0	0
Rep. of Room	256	256	0	0
donation	8	8	0	0
bequest the late R. Adkin Esq.	5	5	0	0
miscellaneous	...	...	...	...
	4,217	4,217	0	0

43,167 11 10

#### Expenditure

	1953	1954	1953	1954
By Royal Entomological Society:				
Wages	...	...	...	...
Printing and Stationery	...	...	...	...
Postage and Telegrams	...	...	...	...
Telephone	...	...	...	...
Light and Heat	...	...	...	...
Repairs	...	...	...	...
Insurance	...	...	...	...
Subscriptions	...	...	...	...
Publications	...	...	...	...
Library	...	...	...	...
Library fund transfer	...	...	...	...
Furniture	...	...	...	...
Cost of publications	...	...	...	...
Stationery, cost of printing, &c.	...	...	...	...
Donations	...	...	...	...
donation to Biological Record	...	...	...	...
transfer to general reserve	...	...	...	...
excess of income over expenditure	...	...	...	...
carried to Balance Sheet	...	...	...	...
	43,167	43,167	11	10

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## STATEMENT OF INCOME AND EXPENDITURE for the Year ended December 31st, 1935.

INCOME.				EXPENDITURE.			
WESTWOOD BEQUEST FUND.				By income for the year, carried to Balance Sheet			
1934.	£	s.	d.	1934.	£	s.	d.
To interest on Birmingham Stock ...	7	3	8	...	...	...	...
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	7	3	8				
	<u>7</u>	<u>3</u>	<u>8</u>				
	£						
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	<u>7</u>	<u>3</u>	<u>8</u>				
	£						
	7	3	8				
	<u>7</u>	<u>3</u>	<u>8</u>				
	£						



## BALANCE SHEET, December 31st, 1935.

## GENERAL FUND.

LIABILITIES.			ASSETS.		
	£	s. d.		£	s. d.
To sundry creditors	£	s. d.	By sundry debtors—		
„ subscriptions in advance	605	12 7	subscriptions valued at	65	0 0
„ excess of assets over liabilities:	46	3 0	publication fees	34	13 0
at 31st December, 1934	35	12 7	rent and contributions to house expenses	364	18 1
Add excess of income over expenditure for year to date	169	8 6	income tax recoverable	252	10 9
			sundries	8	1 10
				17	12 10
			payments in advance	732	16 6
			unsold copies of publications	12	12 9
			„ cash at Bank: current account	—	—
			„ cash in hand	26	18 7
				111	7 5
				£856	16 8

## WESTWOOD BEQUEST FUND.

	£	s. d.		£	s. d.
To excess of assets over liabilities as at 31st December, 1934	257	3 8	By £239 12s. 4d. Birmingham Corporation 3% Stock 1947		
Add income from investment for year to date	7	3 8	at cost	250	0 0
			(value at date £239 0s. 8d.)	14	7 4
			„ cash at Bank	£264	7 4

## HAMILTON DRUCE BEQUEST FUND.

	£	s. d.		£	s. d.
To excess of assets over liabilities as at 31st December, 1934	1,000	0 0	By £1,095 15s. 6d. New Zealand 4% Stock 1943/1963 at cost	1,000	0 0
	£1,000	0 0	(value at date £1,145 1s. 7d.)	£1,000	0 0

## LIBRARY FUND.

	£	s. d.		£	s. d.
To sundry creditors	£	s. d.	By library furniture and fittings		
„ excess of assets over liabilities—excess of income over	16	0	library books (valued at £10,000)	4	18 7
expenditure for year to date	74	12 4	income tax recoverable	59	15 2
Less excess of liabilities over assets at 31st December, 1934	10	14 7	„ cash at Bank		
	63	17 9			
	£64	13 9			



## COMMITTEE FOR THE PROTECTION OF BRITISH INSECTS.

## RECEIPTS AND PAYMENTS ACCOUNT for the year ended 31st December, 1935.

RECEIPTS.		PAYMENTS.	
	£ s. d.		£ s. d.
To balance 1st January, 1935 ..	17 17 4	By expenditure on preservation of <i>M. arion</i> and <i>L. dispar</i> ...	36 0 0
" donations ... ..	34 1 6	" balance 31st December, 1935 : at Bank ...	15 18 10
	<u>£51 18 10</u>		<u>£51 18 10</u>

(Signed) FRANÇOIS HEMMING, *Treasurer*.

We have audited the above Account of Receipts and Payments and certify same to be correct.

We have verified the balance at the Bank.  
(Signed) W. B. KEEN & Co., *Chartered Accountants*.23 Queen Victoria Street,  
London, E.C.4.  
8th January, 1936.



## THE PRESIDENT'S ADDRESS.

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LADIES AND GENTLEMEN,

Another year has passed, and we have again to congratulate ourselves that our Society flourishes exceedingly, thanks to the labours of our Council under the guidance of our Honorary Officers and the assistance of our Registrar. The details of its progress have already been described to you in the Council's Report. Among the more important decisions of that body has been the considerable change in the form of its publications that it is proposed shall come into effect in 1936. This decision is the result of a very close examination of the problem, and the details have been very carefully considered. It is therefore to be hoped that they will meet with general approval. We may also congratulate ourselves on being one of the Societies that will shortly benefit under the will of the late Herbert Spencer, owing to the trust created at his death being about to be wound up.

During the course of the year we have had to mourn the loss of no less than seventeen Fellows, including three of the oldest and most distinguished of them.

By the death of ROBERT ADKIN, we have lost not only a great friend who had been a constant attendant at our meetings for more years than most of us can remember, but who was also a great and generous benefactor to the Society. He died at the age of eighty-six at his home at Eastbourne, where he had so constantly entertained his many entomological friends.

He joined the Society in 1885, served for four periods on the Council, and was Vice-President in 1922 and 1928. Though invited to stand for President on more than one occasion, he could not be persuaded to accept this honour.

Though his interests in Natural History were wide, the British Lepidoptera attracted his chief attention, and he formed an important collection of them. The list of his benefactions to this Society is a lengthy one. He assisted more than any other single Fellow (apart from bequests) towards overcoming the financial difficulties arising out of the purchase of this building. He not only contributed £50 towards the fund, but took up £200 of the debentures, all of which he generously cancelled as they became due for repayment. He also presented to the Society our epidiascope and lantern screen when the new meeting room was built. Not content with this, he made a bequest of £250 to the Society, as well as a selection of the books from his fine library, a long list of which will appear in the next published list of library accessions.

Our Society has sustained another particularly severe loss in the death of FREDERICK AUGUSTUS DIXEY, who died in St. George's Hospital in his eightieth year,

as the result of an accident, on the very day that our Annual Meeting was held last year. Though best known to most of us as an entomologist with a profound knowledge of the Pierine butterflies, Dixey was also a man of very wide attainments and interests. A scholar of Wadham College, Oxford, he was closely associated with his College for the greater part of his long life. After a brief interval, from 1880–1883, during which he was Demonstrator of Physiology at University College, London, he returned to Oxford and was elected to the Wills Medical Fellowship at Wadham, where he successively held the offices of Junior Bursar, Bursar and Sub-Warden. He joined the Society in 1887, was President in 1909–10, Vice-President in 1904, 1905 and 1911 and served on the Council in 1895 and from 1904–1906. He was elected a Fellow of the Royal Society in 1910. To one who, like myself, has many pleasant memories of being Dixey's guest at Wadham at intervals during more than thirty years, his death has left a great sense of personal loss.

EDWARD GOODWIN, who died at his home, Canon Court, Watlingbury, Kent, at the end of last year at the age of sixty-seven, was a keen naturalist, with special interests in Entomology. A large and successful grower of hops, he made a study of the insect pests of this crop and was also very successful in breeding many of the rarer British Lepidoptera. He had been a Fellow since 1904.

HAROLD CARLYLE HAYWARD, who had been a Master at Repton for more than thirty years, died on 13th April last at the comparatively early age of fifty-nine. He was specially interested in the Lepidoptera, particularly in the TORTRICIDAE, of which he made a large collection. Among his publications is a very complete list of the Lepidoptera of Derbyshire, published in 1926. He became a Fellow of our Society in 1919.

PAUL MARTIN, of Lima, Peru, who had only become a Fellow of the Society this year, was a German veterinary surgeon, who had lived in Peru for more than twenty years. He had made an extensive study of the insects of that country, particularly the Rhopalocera.

ARTHUR LESLIE RAYWARD, who died in October last in his sixty-ninth year, joined the Society in 1907. Though the state of his health seldom permitted him to attend our meetings, some of us had the opportunity of making his acquaintance at Eastbourne at the house of his friend, Robert Adkin, whom he only survived a few months. He was a keen naturalist and skilled microscopist, with a special interest in the Lepidoptera.

CHARLES ERNEST STOTT, who joined the Society in 1915, died on 18th September after a long illness at the age of sixty-seven. He was a well known authority on the British Coleoptera and published many notes on this Order.

ARCHIBALD HENRY SWINTON, who died at Braishfield, Hampshire, aged ninety-one, was the senior Fellow of the Society, having been elected a Member (as the Fellows were called prior to the granting of the Charter) so long ago as 1876. As a

young man he served in the army for a short time and was stationed in Mauritius, but was invalided home and entered an architect's office. Ill health having again forced him to retire, he devoted his long life to his hobby of Entomology. Some of his original researches include the discovery of auditory organs in the cicadas, and his most important publication was entitled "Insect variety : its Propagation and Distribution."

Prebendary ARCHDALE PALMER WICKHAM, Vicar of East Brent, who died in October last within a month of his eightieth birthday, was well known to many of us. He was a scholar of Marlborough, where he was Captain of the School, and also of New College, Oxford. He was a famous cricketer in his day, and he played for the Gentlemen *v.* the Players on three occasions. He joined our Society in 1917 and was a keen student of the Lepidoptera, especially in recent years of the Microlepidoptera, of which he made a large collection.

Other Fellows whose loss we have to deplore are :—KENNETH F. ARMSTRONG, elected in 1930, who was killed in an accident whilst mountaineering; the Rev. E. B. ASHBY, elected in 1911; WILLIAM GEORGE BAINBRIDGE, a student of the Trichoptera and Ephemeroptera, elected in 1933; W. G. CLUTTEN, elected in 1922; G. H. GURNEY, elected in 1906; G. B. KERSHAW, elected in 1904; W. ORMISTON, elected in 1913, who died at Colombo; and J. D. WARD, elected in 1919.

Among those, not Fellows of our Society, who have passed away during the year, mention should be made of ANTON HANDLIERSCH of Vienna, who had a great international reputation for his profound knowledge of fossil insects.

In accordance with our custom on this occasion, I will ask you to rise for a few moments as token of respect to the memories of the colleagues that we have lost during the year.

For to-night's address I have ventured to put on record some random notes on

#### THE RELATIONS BETWEEN MANKIND AND THE INSECT WORLD.

Before briefly reviewing the evolution of man's study of the insects and their reactions on him and on his life on this planet, we might perhaps ask ourselves what exactly is the nature of our interest in the subject, and more particularly what is our objective in studying it. To the savage, insects are merely of interest as an occasional source of food and sometimes as a source of annoyance and irritation, though in the latter respect far less than is the case among more civilised peoples. As man became more educated, insects gradually became objects of interest in themselves on account of their often brilliant and striking coloration, their extraordinary resemblances to other objects, their remarkable diversity of form, their apparently mysterious habits and metamorphoses, and their power of appearing suddenly, and as it would seem spontaneously, in vast numbers. Anything approaching an exact knowledge of them or their habits has, however, developed very slowly during the historical period. Even at the present day the less civilised tribes of Central Africa are completely unaware of the metamorphoses of insects, and are



frankly incredulous when told that the many species of caterpillars that they cook and eat as a relish with their maize porridge are in fact the immature stages of more or less familiar moths. Nor is the idea that spontaneous generation can occur among insects by any means extinct among the less educated members of even the most civilised communities. It is still, for instance, often asserted that swarms of Aphids have appeared *de novo* as the result of some particular climatic conditions, or that grain weevils or some similar pest have come into being spontaneously in a ship's cargo.

Though insects and their habits, especially those of colonial species, have attracted the attention of thoughtful and observant individuals among the more civilised communities since at least the days of the Ancient Greeks, it was a very long time before serious attempts were made to construct a classification of them. An early example is that by John Ray, F.R.S., in a very rare pamphlet contained in our library to which the Registrar has drawn my attention. It is dated 1705 and is entitled *Methodus Insectorum seu Insecta in methodum aliqualem digesta*. Under the term "insecta," are included, not only the Arthropods in general, but also many of the Vermes, and the main distinctions between them are based on their habits, whether terrestrial or aquatic. It was not, however, until the time of Linnaeus that, in common with other branches of the Animal Kingdom, attempts to put the taxonomy of insects on a serious scientific basis met with some degree of general acceptance. Since that date, thanks to the combined efforts of the field naturalist and of the systematist, bewildering numbers of species have come to be described in the literature. How great are the numbers involved can be guessed at when we recall that in species the class Insecta probably outnumber the whole of the rest of the animal kingdom and that the generic names used for them already exceed 100,000. Even now we have done little more than touch the fringe of the subject, particularly of the more obscure and inconspicuous groups.

It is not necessary to recapitulate at length the reasons why insects have been relatively so successful in the struggle for existence compared with other classes of animals. It is clear, however, that they have derived enormous advantages from their remarkable powers of reproduction and of adaptation to their environment, as well as from their external skeleton, which, though it puts a limit to their size (probably an advantage in itself), is exceedingly efficient in other respects. As compared with man himself, they have the further advantage of immensely greater antiquity, dating as they do from at least the late Palaeozoic, and having therefore been present on this planet at least a hundred times as long. This, at least, is incontrovertible evidence of their capacity to survive under all the changes of an immense period of time, and it remains to be seen whether so recent an animal as man will be equally successful.

Before dealing with the vital necessity for increasing our knowledge of insects from the systematic standpoint, it should be pointed out that there is one aspect in which Entomology differs from other branches of Zoology, and that is its profound economic importance. Though many animals, especially the vertebrates, are of great value to man in that they provide him with food, clothing and transport, there is no class of them that comes into direct competition with him to any important degree with the exception of the insects and some other Arthropods. Many accounts have been given in recent years of the way in which insects injure the health

of man, and therefore reduce his efficiency, sterilise much of his labour in agricultural and forestry enterprises, or damage the resulting products when stored or manufactured, and I do not propose to go into them in detail here. Nevertheless, I may perhaps repeat a view that I expressed in a memorandum prepared for the Third Imperial Entomological Conference which was held in 1930. If we take the population of this planet at 2,000 million persons and that 10% (a modest estimate) of their efforts are brought to nought by the combined results of the varied ways in which insects are injurious to man, it would appear that, but for their presence, the world could support no less than 200 million more individuals with the expenditure of the same effort as is exerted at the present time. These are large figures, and it is a remarkable fact that it is only the other day, so to speak, in the history of civilisation that there has been any general recognition of the position.

It is true that there is another side to the picture. The silkworm has so long been domesticated by man that, like some of the oldest cultivated plants, it probably no longer exists in the wild state. The honey bee has also been more or less domesticated for much the same period. The products of these insects, added to the efforts of those that produce substances such as lac and cochineal, are, however, a very small compensation for the injuries inflicted upon us by the hordes of insect pests of one kind or another.

In the early days of civilisation plagues of insects were looked upon as evidences of divine wrath, and no attempts were made to stem them other than by offering prayers for relief from them. In the Middle Ages the strange custom obtained of bringing lawsuits against injurious insects. Some curious examples of this have been given by one of our Honorary Fellows, Dr. L. O. Howard,\* and I cannot do better than quote his words: "Legal procedures against all sorts of noxious animals were frequent, and the famous Burgundian legal light, Bartholomaeus Chassanaeus, wrote a book setting forth the rules according to which a suit against grasshoppers should be entered. After a court had been called together by written request, a judge was appointed and two lawyers were elected, one to plead the cause of the people and one the cause of the accused grasshoppers. The former commenced by formulating the charge, and concluded by demanding that the grasshoppers be burned. The defendant's lawyer replied that such a request was illegal before the grasshoppers had been requested in due form to leave the country. When, however, they had not left the country after a stated term, they could be excommunicated." He goes on to describe how later on another jurist, Hiob Ludolph, published a work, calling attention to the lamentable legal ignorance displayed by Chassanaeus. In *his* view the accused grasshoppers must be summoned four times before the court. Failing their appearance, they must be brought before it by force. Other interested parties, such as the birds that fed on the grasshoppers, would also have the right to be heard. Howard (*loc. cit.*) also quotes a specific case at Berne in 1479 when an action was brought against worms, apparently cutworms. The worms, despite an able defence, lost their case and were excommunicated and banished. It is perhaps not surprising that in the words of the contemporary chronicler "No effect whatever resulted, evidently on account of the great depravity of the people."

The importance of the question had, however, begun to receive recognition in

\* 1895, *Insect Life*, 7: 57.

the late eighteenth and early nineteenth centuries among the relatively few individuals in the community who were interested in the subject, and it may not be out of place here to put on record details of some of the comparatively few important works on Economic Entomology that were published between the latter half of the eighteenth and the middle of the nineteenth centuries. Practically all of these are represented either in our own library or in that of the Imperial Institute of Entomology, and I am indebted to the librarians of these two institutions for assistance in compiling it.

- FRISCH, J. L., 1720-1738, Beschreibung von allerley Insekten in Teutschland. 13 pts., *illustr. col.* Berlin.
- RÉAUMUR, R. A. F. de, 1734-1742, Mémoires pour servir à l'histoire des Insectes. 7 vols., *illustr.* Paris.
- BONNET, C., 1745, Traité d'insectologie; ou observations sur les pucerons. 2 pts., *illustr.* Paris.
- DUHAMEAU DU MONCEAU, H. L., and TILLET, M., 1762, Histoire d'un insecte qui devore les grains de l'Angoumois, &c., *illustr.* Paris.
- LYONNET, P., 1762, Traité anatomique de la chenille qui ronge le bois de Saule, &c., *illustr.* La Haye.
- GMELIN, J. F., 1787, Abhandlung über die Wurmtrockniss, *illustr.* Leipzig.
- KOB, J. A., 1790, Die Wahre Ursache der Baumtrockniss der Nadelwälder durch die Naturgeschichte der Forlphaläne (*Phalaena Noct. Piniperda*), &c., *illustr.* Frankfurt a.M.
- LINKER, J. J. Freyherr von, 1798, Der besorgte Forstmann. Eine Zeitschrift über Verderbniss der Wälder durch Thiere, &c. Bd. 1, *illustr.* Weimar.
- KIRBY, W., and SPENCE, W., 1815-26, An introduction to Entomology, 4 vols., *illustr.* London.
- BECHSTEIN, J. M., 1818, Forstinsectologie . . . oder Naturgeschichte der für den Wald schädlichen und nützlichen Insecten, 2 Thle., *illustr.* Gotha.
- MAJOR, J., 1829, A treatise on the insects most prevalent on fruit trees, &c. London.
- THIERSCH, E., 1830, Die Forstkäfer oder vollständige Naturgeschichte der . . . schädlichen Insekten, *illustr.* Stuttgart.
- BOUCHÉ, P. F., 1833, Naturgeschichte der schädlichen und nützlichen Garten-Insekten und die bewährtesten Mittel zur Vertilgung der Ersteren. Berlin.
- KOLLAR, V., 1837, Naturgeschichte der schädlichen Insekten, &c., *Verh. k. k. Landw. Ges. Wien* (n.f.) 5: 1-424. Wien.
- RATZBURG, J. T. C., 1837-44, Die Forst-Insekten, &c., 3 Thle., *illustr.* Berlin.
- DE LA RUE, A., 1838, Entomologie forestière, &c., *illustr.* Paris.
- HARRIS, T. W., 1841, A treatise on some of the insects of New England, which are injurious to vegetation. Cambridge, Mass.
- SIDNEY, E., [1846], Blights of the wheat and their remedies. London.

We may also congratulate ourselves that the members of our Society were amongst these pioneers. In 1834, the year after its foundation, the Council offered a prize for an essay on the Turnip Fly, and between that date and 1870, a series of such prizes was offered. This enterprise was so far in advance of its time that it did not meet with a great deal of response, but it is at least evidence that, from its inception, our Society has recognised the importance of this aspect of the subject.

Not only have insects been a steady handicap to the attempts of mankind to compete with external conditions, but they have had, especially those of medical importance, a marked influence on the course of history, particularly since the European races began to explore and occupy the tropical regions of the world. Many historians believe that the introduction of malaria into Ancient Greece was one



of the main factors that brought that great civilisation to an end. In the sixteenth century the several expeditions made by the Portuguese to extend their dominion in Central Africa are thought to have failed mainly owing to the presence of the tsetse fly. It is said, too, that but for outbreaks of yellow fever, a mosquito-borne disease as you all know, the island of Porto Rico would now be British, that of Hayti French, and the story of the making of the Panama Canal would have been very different.

A long time was, however, to elapse before there was any general recognition of the importance of the question by the public at large or among the Ministers and permanent officials of Governments. It was not until the last half of the nineteenth century that any economic entomologists were officially employed, and then only in exceedingly small numbers.

To the United States of America must be given the credit for being the first country where the importance of economic entomology was first recognised officially. Dr. Thaddeus Harris seems to have been the first entomologist to receive payment for his services when he completed the publication of his famous report on "Insects Injurious to Vegetation" in 1841, though his first paper \* to be issued on the subject dates from 1823.

The first official Government Entomologist also appears to have been appointed in that country when Townend Glover was given a post in 1853 in the Bureau of Agriculture of the U.S. Patent Office, one of his duties being "to collect information on Insects." In the following year Dr. Asa Fitch was appointed by the New York State Legislature to examine insects, especially those injurious to vegetation. The Governments of the British Empire were slower to enlist the services of entomologists, and the first to be appointed seems to have been Dr. James Fletcher, who was made entomologist to the Department of Agriculture in Canada in 1884, at first in an honorary capacity. There had, however, already been some public recognition of the value of entomology by the Government of that Dominion, the Province of Ontario having begun to make a small grant to the Entomological Society of Ontario as early as 1870-71. In Australia Government Entomologists began to be appointed towards the end of the century, Charles French in 1889 in Victoria, A. S. Oliff in 1890 in New South Wales, H. Tryon in 1895 in Queensland, and A. M. Lea in 1896 in West Australia. In New Zealand, Prof. J. W. Kirk was appointed Biologist to the State Department of Agriculture about 1890. South Africa was not far behind, and its first Government Entomologist, C. P. Lounsbury, was appointed in 1895.

In this country, probably owing to the fact that our long standing agricultural conditions have produced a new equilibrium, our entomological problems are far less serious and obvious than in more recently developed parts of the world. During the middle of the last century there was little published of importance relating to economic entomology, with the exception of the famous work on "Farm Insects" which appeared in 1860 by John Curtis, who was President of our Society in 1855. Not very long afterwards, there began to appear, at her own expense, the well known "Reports on Injurious Insects" by another of our distinguished Fellows, Miss Eleanor Ormerod, who was Honorary Consulting Entomologist to the Royal Agricultural Society from 1882-92, and her "Manual of Injurious Insects" also appeared in the latter year. So far no Government Entomologist had been appointed,

\* Upon the Natural History of the Salt Marsh Caterpillar.

though an abortive attempt was made as early as 1877 to press for one at a meeting held at the Society of Arts at which the Chairman was the Duke of Buccleuch. No account appears to have been published of the position during the next thirty years, and at the risk of boring you with further details, I venture to put on record the following information which has been kindly communicated to me by Mr. J. C. F. Fryer, Director of the Ministry of Agriculture and Fisheries' Plant Pathological Laboratory. In 1885, C. Whitehead began to present reports to the Agricultural Department of the Privy Council Office that dealt largely with agricultural pests, and in 1888 he became Agricultural Advisor to the "Lords Committee of the Council for Agriculture," to whom he presented a series of Annual Reports on "Insects and Fungi Injurious to the crops of the Farm, the Orchard and the Garden." He occupied a similar position in respect of the Board of Agriculture which was apparently created about 1889, and a year later he is described as Technical Adviser to the Intelligence Department of the Board. It appears to be uncertain for how long this arrangement continued, though reports by Whitehead up to 1892 are in existence. At the beginning of this century the Board was still without its own entomologist and was advised on entomological matters by F. V. Theobald, then at the British Museum, and on his departure to Wye, about 1905, by Dr. R. Stewart MacDougall. It is, therefore, not a little remarkable that it was not until 1912 that the Ministry of Agriculture (or Board as it then was) appointed its own entomologist in the person of Mr. J. C. F. Fryer.

From that time, a more general recognition of the need for employment of entomological advisers has spread throughout the civilised world, and at the present day there are between three and four hundred trained entomologists in the British Empire alone, not to speak of large subordinate staffs.

This rapid change seems to have been due to a variety of causes. There is little doubt that entomology, in common with all the Sciences in their applied aspects, received a great stimulus as a result of the Great War. Furthermore, the demand for higher standards of agriculture and for crops of better quality has brought about a steadily growing need for advice against noxious insects. Government Departments, too, have found it essential to have on their staffs those who can advise as to the many quarantines against pests and other legislative measures that are the inevitable result of a vastly increased international trade.

The demand for entomologists thus created, at first produced considerable difficulties in this country, since neither the staff nor adequate machinery for training them then existed. Though matters have improved in recent years, it is to be deplored that at many of our Universities only limited facilities still exist for the training of entomologists, and insects are not as much utilised in the zoological schools as material for study as their remarkable and varied characters would appear to justify.

The recent meteoric advance in the attention given to insects, more particularly on the economic side, has, however, somewhat thrown out of gear the relations between it and the other branches of the science, more particularly the taxonomic one. While Government funds have been provided to an increasing, though still inadequate, extent to finance the economic entomologist, the fact that this has thrown an immense burden on those concerned in dealing with the systematics and identification of insects hardly seems to have been sufficiently recognised. At the

present time the ever-growing demands, arising from the innumerable investigations on insect pests and their insect parasites that are in progress all over the world, are quite impossible of satisfaction with the existing staffs. It is therefore incumbent upon Governments to spend more money in this direction if they are to derive the full benefit from the funds they already contribute to the solution of economic problems in Entomology. It must be remembered also that, though the amateur entomologist has done, and is still doing, excellent work in this direction, it is unlikely that in the days to come there will be so many men of the necessary leisure available as has been the case in the past.

It would seem obvious that an exact knowledge of the classification and identity of insects must of its very nature be the basis of our science, and that without it we should be unable to exchange with each other any knowledge of it that we may have. Nevertheless, incredible though it may seem, those who would decry its importance are by no means as rare as might be expected. Even in the present year, Dr. W. T. Calman, C.B., F.R.S., the distinguished President of the Linnean Society, with which we have had so many close relations in the past, has, in his latest Presidential Address,\* found it necessary to comment with extreme severity on the remarks of an anonymous reviewer in *Nature* published at the beginning of the present year, who is apparently of the opinion that taxonomy "leads nowhere." Surely, in fact, it leads everywhere along the many avenues with their diverse ramifications that so many biologists are striving to explore. How other than by the work of the systematist in conjunction with that of the morphologist, embryologist and biologist can we advance our conceptions of the evolution of insects? All these equally important branches of our science are entirely dependent for the interchange of information on the accurate identification and classification of the innumerable species with which we have to deal. Moreover, the benefits derived between one branch of the subject and the other are mutual, and taxonomy itself has been enormously stimulated by discoveries during the last thirty years of the economic importance of many families of insects. Without making any exact calculation, it is quite safe to say that our knowledge of the CULICIDAE has advanced at least twenty-fold during the last thirty years since the relation between these insects and diseases such as malaria, yellow fever, filariasis, etc., became realised. To take a more concrete example, the number of species or varieties of the sandfly genus, *Phlebotomus*, mentioned in the first three volumes (1913-15) of the *Review of Applied Entomology*, Series B., which was 19, has grown in the last three completed ones (1932-34) to no less than 85. In Kieffer's volume on the Ceratopogonid midges, published in 1906, no species of *Culicoides* are recorded from the Ethiopian region. Since that date the names of at least sixty have appeared in the volumes of the *Zoological Record*.

Many other examples might be added of the influence that the recent expansion of Economic Entomology has had on our information respecting many families of insects and rendered imperative a more accurate knowledge of the species concerned and their inter-relations with each other. These demands on the systematist by the student of the applied side of the subject will undoubtedly become greater every year. One of the most outstanding features of the Fourth Imperial Entomological Conference, held in this room in September last, was the unanimously expressed

\* 1935, *Proc. linn. Soc. Lond.*, 147: 145.



demand by that very representative gathering of practical men for the utmost possible extension of the systematic work that is at present being done. Special attention was drawn in this connection to our still lamentable ignorance of such economically important groups as the parasitic Hymenoptera and Diptera and the termites. It is obviously essential for the present gaps in our knowledge to be filled, if we are to make proper use of the two former groups in solving problems where the principle of biological control can be utilised. Nor can we hope to undertake a campaign against the last-named insects that has any prospects of success, until we know a great deal more about them.

I do not think that I can do better in this connection than quote the following from the introduction to Curtis' "Farm Insects," to which work allusion has already been made:—"In perusing this volume, the reader who wishes to make himself acquainted with the economy both of his insect friends and enemies, whose histories are the subject of the following chapters, ought not to pass over as useless the descriptions of the various species. It is a great mistake to suppose, that scientific descriptions and correct nomenclature ought to be employed for the use of those only who are specially engaged in the study of natural history. If insects be not thus accurately and scientifically described, and their names carefully learned, the facts noticed by practical observers are generally worthless, and may tend to mislead, by the confusion of one species with another, and the consequent adoption of improper remedies. It is thus that I have found, in my extensive reading on these subjects, that a very large amount of the information given by practical agriculturalists and gardeners, has proved valueless in cases where, if the particular species alluded to could only have been identified, it would have been of great value in furthering subsequent investigations."

No doubt there are still many directions in which our systematists need to put their house in order. So far as our Society is concerned, I think that we can justifiably claim to have done our best within the limitations of our means. In the last few years we have not only brought into being a new journal devoted to systematic entomology, but have begun the publication of that important work *The Generic Names of British Insects*, to which allusion was made in my Address last year.

I do not propose here to touch at length on the extremely thorny and complicated questions of nomenclature. Suffice it to say that nowadays many non-entomologists find it necessary to use the names of the commoner insects, especially those that are important in an economic sense. The number of medical men interested in the subject of insect-borne diseases, of engineers dealing with anti-malarial drainage problems, of chemists studying insecticides and of bacteriologists engaged on researches into insect-borne virus diseases of plants is a considerable one. To the workers in such closely associated fields, changes in the name of a common insect, such, for example, as the yellow fever mosquito, not only cause dire confusion, but give them the impression that entomologists have a very uncertain knowledge of their own subject. It is greatly to be hoped that the principle of the adoption of *nomina conservanda* will be widely extended in such cases in the near future. Indeed, in my view, it is essential that something of this sort should be done without delay if we are to retain the confidence of the numerous workers in the many subjects that now touch the fringes of modern Economic Entomology.

To the layman the complications of nomenclature are such that the subject tends to become an object of derision, and I cannot refrain from again quoting a translation from a German source that I communicated at one of our meetings some fifteen years ago :—" Once upon a time there was a land called Nomenclatoria. The inhabitants of this land were interested in many animals, and to distinguish them from one another they gave every animal not only one but even two names. If in those days a collector caught a hawk moth, he could be almost certain that it belonged to the genus *Sphinx*. But soon the imperfections of this system became apparent. To the scientists of Nomenclatoria the genera appeared too large, so they were divided, and the divided ones subdivided, and continually changed, until after the lapse of several decades every second species had its own genus.

"Then the specific names had to be changed and new ones erected, so as to describe all the newly discovered aberrations and variations. One scientist had the ingenious idea of transposing the syllables, *e.g.* for variations of *podalirius* he used the names *lidaporius* and *daporilius*. And all, who read this, marvelled at his brain.

"Soon this was also inadequate, and every animal received three names, and after another twenty years every species had six names in which the specific name of the original form was repeated five times. Ignorant people in Nomenclatoria grinned vacantly at this and made stupid remarks about the waste of time and space.

"An old King of a neighbouring country, who had collected butterflies in his youth and prided himself on his knowledge, came on a visit. When viewing the State collections, he stopped in front of a lime hawk moth and said proudly to his guide : ' Aha, that is a *Sphinx tiliae*.' The guide was startled to death, but quickly pulled himself together and answered : ' It is entirely possible, Your Majesty, that this specimen was so called a hundred years ago. In the course of time the generic name after undergoing a more and more glorious perfection, and passing through *Smerinthus*, *Dilina*, *Mimas* and about ten other alterations, has to-day developed into *Caudex*. But this species that Your Majesty deigned to point out, is not the original form of *Caudex tiliae*, but, owing to the band on the fore-wing, as Your Majesty notices, being 1/10 mm. narrower than that of the normal form as recognised by the State, is *Caudex tiliolus tilioides tiliabundus bundilatus lidabuntius*.'

"When the guide had spoken thus, the strange King demanded forthwith two national liqueurs. He then returned to his own country and forthwith issued a decree that no animal should be allowed to have more than two names. In consequence his kingdom was considered by the scientists of Nomenclatoria to be deplorably behind the times. During the last few years, however, there has been an astonishingly large number of cases of *dementia praecox* reported from Nomenclatoria. Whether this has anything to do with the development of the names has not been determined."

So vast is the class Insecta that it is inevitable that work on its systematics must become greatly specialised. We should, however, perhaps remember that one modern definition of a specialist is "one who knows more and more about less and less." Let us beware in Entomology lest our critics come to extend it to "one who knows everything about nothing"! Let us remember, too, that careless work or conclusions based on inadequate material only increase the labours of others and more often than not cancel out the steps forward taken by more conscientious workers.

Though the systematist who confines himself to descriptions of species performs a useful, and indeed necessary, function, his work is of little value unless his contemporaries are carrying on the more difficult task of framing generic distinctions and the broader outlines of classification. The capacity for clearly distinguishing between generic and specific characters is, however, less common than could be wished. Those who split up recognised genera into innumerable others on what are not more than specific characters merely complicate the issue for others. Without the work of those who are capable of making diagnoses of the broader outlines of classification, the building of entomological knowledge that is being constructed will consist of vast numbers of loose bricks, with inadequate supplies of mortar and with a disconnected or non-existent framework. Nor must we forget the vital need for the guides to such a building, the bibliographer and librarian, whose function it is to tell us where the varied parts of this great structure are situated and where the individual bricks have been placed.

Let me conclude this brief and necessarily somewhat superficial review by returning to our starting-point and trying to define our objects in studying this branch of Natural Science. There seem to me to be two main ones, and, if I put one before the other, it is not because they do not appear to be equally important and fruitful. Those to whom the practical side makes most appeal are clearly benefiting mankind in acquiring knowledge that assists in combating the creatures that are disputing with us for the dominion of this planet. To the student of pure science and to the philosopher nothing but benefit can be derived from a knowledge of the evolution of successful adaptations in a race of creatures entirely dissimilar from himself. Even the political student may perhaps acquire some benefit from a close study of colonial insects, amongst which the individual has no importance. He may thus learn to realise the impracticability of grafting a communistic system upon man who has evolved from the beginning on individualistic lines.

In bringing this Address to a close, I must express my thanks to you for listening patiently to what I fear has been a somewhat rambling discourse. I may also take this opportunity, on the termination of my period of office, of thanking the Officers and my numerous friends on the Council for their many kindnesses and of expressing the hope that my distinguished successor will derive as much pleasure from the occupation of this Chair as I have done.



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TO THE

## PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

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## ERRATA.

- p. 15, No. 23, for *O. violata* read *O. venata*.  
 p. 16, No. 43, for *D. antiopa* read *D. antiqua*.  
 p. 37, 3 lines from bottom, for *hydromyza* read *hydromyzina*.

PRINTED IN GREAT BRITAIN BY  
RICHARD CLAY & SONS, LIMITED,  
BUNGAY, SUFFOLK.



# THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

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*The Chair will be taken at Eight o'clock.*

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